

TOWN PLANTING

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THE LONDON
PLANE



THE LONDON PLANE

Frontispiece

TOWN PLANTING

AND THE TREES, SHRUBS, HERBACEOUS
AND OTHER PLANTS THAT ARE BEST
ADAPTED FOR RESISTING SMOKE

BY

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PREFACE

THIS book is the outcome of an Essay on "Town Planting" for which the Royal Scottish Arboricultural Society awarded me their gold medal.

Having charge of the grounds of many public buildings in several of the worst smoke-infested parts of London, exceptional opportunities have been afforded me of getting together a list of the most suitable trees, shrubs, and other plants for withstanding the impurities of a town atmosphere and also of studying the conditions under which they may be most successfully cultivated. The need of such a work will be understood when it is stated that in the County of London alone there are 116 square miles of houses and streets.

The Photographs from which the sixteen Plates have been reproduced were taken specially for this volume by Messrs. Ellis & Walery.

A. D. WEBSTER

REGENT'S PARK, 1910.

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CHAPTER I

TOWN PLANTING

PROBABLY no work connected with horticulture requires more judgment and good management than the planting of trees and shrubs in urban districts. The materials and soil of which streets and town gardens are usually formed are ill fitted for sustaining a healthy condition in trees and shrubs for any length of time. This fact, coupled with the impurities of the atmosphere in densely populated centres, has to be constantly borne in mind. In more favourable districts all that is necessary is to open a pit of sufficient size to contain the roots of the tree or shrub to be planted; but in towns the soil, often hard as iron and composed mainly of refuse building materials,

contains but little plant food. For many years past careful observations have been made, not only in London, but in Glasgow, Liverpool, Manchester, Warrington, and Dublin, as to which trees and shrubs succeed best in the most smoky localities of each town, and it is mainly by tabulating these different experiences that satisfactory information on the subject has been obtained. Coal smoke from the chimneys in the larger and more crowded centres of industry is no doubt bad enough, but, when we have to contend with an atmosphere that is largely impregnated with the outcome from chemical, gas, or iron works, the difficulties to be encountered are correspondingly increased.

The injurious effects of smoke have become much more pronounced during the past century, and Sir William Richmond, R.A., told the annual meeting of the Coal Smoke Abatement Society last year that Westminster Abbey had suffered from more rapid decay in the last hundred years than in all the previous centuries of its existence. The chief

cause of the destruction of the stonework has been shown to be the presence in the air of sulphur acids: the stone is converted into sulphate of lime; in the process of its formation this disintegrates the stone by expansion. The connection between smoke and stone decay appears to be invisible gases emitted from the smoke particles.

If stonework suffers so at the hands of smoke and sulphuric and other acids, what, it may be asked, must the effect be on the foliage of trees and shrubs—particularly such as are planted in the most smoke-infested parts of our great towns and cities? When compared with Continental cities — Paris, Brussels, or Berlin—where tree culture is carried out most successfully, the atmosphere of British towns is impregnated to a far greater extent with noxious fumes. Dry low-lying and confined areas, particularly where excessive heat and atmospheric impurities are present, are decidedly the worst, while open and high-lying districts, though in the centre of a town, offer fewer difficulties.

That certain trees and shrubs succeed best in particular towns is a well known fact, and the smoke-proof London Plane is by no means the best tree for some of the colliery districts; in Sheffield, for instance, its place is largely taken by the Canadian Poplar. In Manchester, the Lime would appear to thrive best, after which the Elder, Thorn, and Plane succeed in the order named. The variegated leaved Sycamore and the Horse Chestnut are favourites where the smoke from collieries is most offensive. But many such cases could be pointed out, and even in the case of bedding plants certain species succeed best in particular localities. In the gardens about the Royal Mint, and where exposed to the deleterious fumes from gold-refining works, Fuchsias do remarkably well; indeed, the dwarf edging variety, Golden Treasure, thrives so well that advantage has been taken of the fact to propagate some of the stock that is annually required for one of the London parks from cuttings taken at the Mint. In the East End of London the Creeping Jenny (*Lysi-*

machia) thrives well as a window plant, while in the chemically impure atmosphere of Lambeth one of the Veronicas is the favourite plant for indoor culture. The St. John's Worts (*Hypericum*) do not as a rule thrive well in London; yet around the Tate Gallery, which is only divided by the river from the Lambeth pottery district—the worst in the metropolis for atmospheric impurities — one species at least flourishes amazingly, and has produced flowers in abundance for many years past; while, at St. Paul's Churchyard, the lesser Periwinkle (*Vinca minor*) has become quite established and runs about freely. In Chancery Lane, at the Record Office, the common Ivy, Bladder Senna, and Yucca do best. In other parts of London two well known varieties of *Campanula* are largely grown as pot plants. It is a somewhat strange fact, too, that some varieties of trees and shrubs succeed better than the type species in smoky localities, as witness the London Plane (a variety of *Platanus orientalis*), variegated-leaved Sycamore, Fasti-

giate Poplar, two varieties of *Pyrus*, Weeping Elm, Weeping Ash, and several varieties of *Acacia*, notably *Robinia Pseud-Acacia inermis* and *R. Pseud-Acacia Bessoniana*.

Similarly, amongst shrubs, we have the dwarf Holly, golden varieties of *Euonymus*, Privet, and *Ribes*, the double-flowered Gorse, *Euonymus radicans variegata*, and others. With Grasses, too, some curious experiences might be related. At the British Museum the Yarrow completely ousted the Grasses from the plots in front of that building, and in the moat of the Tower of London several Grasses that succeed in less smoky parts of the metropolis quickly die out. Near the main entrance to the Tower of London, and close to Billingsgate Fish Market, considerable difficulty was experienced in getting the Plane trees established; though, in the matter of soil and choice of strong, sturdy specimens, everything that could be thought of was accomplished. At last it was found that the drip from the fish carts was the cause of the evil, and a remedy was quickly found.

In another garden, where dust, smoke, and soot are plentiful, the Bladder Campion (*Silene inflata*), *Saponaria officinalis*, the common Marigold, and Rye Grass seem to positively revel. In situations almost constantly subjected to the sulphurous fumes of the railway engines near Camden Town, and in the poorest of soils, *Poa annua* would appear to be quite at home. The chemical fumes from the pottery works at Lambeth are well known to act injuriously on vegetation generally, but the Mulberry, Fig, Sycamore, Turkey, and Evergreen Oaks thrive as well there as they do in any part of the metropolis. The fumes given off from many of our City manufactories act most perniciously on vegetation generally—a fact that was brought to my notice by the behaviour of some of our most valuable smoke-resisting trees and shrubs that have been planted in the graveyard at St. Giles-in-the-Fields. Meeting the gardener there I remarked on the wretched condition of the trees and shrubs generally, his quick reply being, “Well! with Crosse & Blackwell’s

on the one side and Nixey's Black Lead Works on the other it's a wonder there's a living plant left!" Here the common Fig and Black Poplar seemed better able to withstand the atmospheric conditions than either the London Plane or Acacia. With the largely increased use of coal gas for cooking purposes, improved grates, and the better combustion of fuel, the atmosphere of certain districts of London has, however, become much less smoky than was the case a few years ago, and in consequence vegetation generally succeeds better. This is especially the case in some of the low-lying districts adjoining the Thames where the "slot" system of providing gas for cooking purposes has caused a great decrease in the consumption of coke and coal, with a corresponding reduction of the attending evils of smoke and soot. In one of the poorest parishes many of the inhabitants have taken advantage of the facilities offered by the gas company in the matter of cooking by means of gas provided by the "slot" system, which, in comparison with coal, has been

found not only cheaper, but cleaner and handier to use. According to a competent authority, the smoke nuisance has, in consequence, become greatly abated, and with the purer air the cultivation of window and other plants, as well as trees and shrubs, has been to some extent simplified. The electrification of the Underground Railway has also had a beneficial effect on vegetation. Although we cannot prevent fog, which is an atmospheric condition, yet much can be done to prevent it being a dirty fog, and during the past five years much has been done in that particular way. Better roads with less dust also assist largely in keeping the atmosphere of London in a pure condition.

With the rage for coniferous trees which was at its height about a quarter of a century ago, it is not surprising that several species of Cypress and Cedar, the stately Pines and Arbor vitae, as also the Araucaria and Junipers, found their way into our town gardens and squares. Hosts of evergreens,

too, from almost every part of the world were introduced to London planting, but few have been able to survive the smoky and otherwise impure atmosphere of the great metropolis.

Deciduous trees and shrubs, both flowering and ornamental leaved, should certainly be the *sine qua non* of the London planter. Amongst evergreen trees few are suitable for town planting, and, though a limited number of evergreen shrubs may succeed for a time, yet the list of deciduous species is far more extensive. We have only to take notice of such evergreens as the Holly, Rhododendron, Laurel, and all the conifers, with probably one exception, to find how useless it is to plant them in expectation that they will give satisfaction. This is not hard to account for, as in winter, when the fires are all alight and smoke and soot the order of the day, the leaves of evergreens are fully developed and in the best possible condition for reaping the attending disadvantages. With deciduous species the case is quite different, for these are, so to speak, asleep when the deadly

smoke and vapours are most abundant in our towns and cities. I am quite aware that one occasionally sees evergreen shrubs and trees in a fairly thriving condition; but it should be remembered that in the majority of such cases they were planted when conditions were much more favourable than at present.

It is, perhaps, to be regretted that evergreen shrubs do not succeed better in smoky localities, being planted principally for their refreshing colour in winter; but if our atmospheric conditions utterly preclude the use of such, then it is folly to throw away money on useless planting, and the winter aspect of deciduous trees and shrubs is infinitely preferable to that of unhealthy evergreens. The bursting into leaf of the deciduous tree or shrub is not shared to a like extent by evergreens, which lack that delightful changefulness and the interest that is attached to spring growth.

It is difficult to define accurately the boundaries of a town or the worst smoke-infested areas, as far as tree and shrub growth is

concerned. In London, for instance, certain trees and shrubs which positively refuse to live in the heart of the city do fairly well in the suburbs, while still further out, where the atmosphere is comparatively pure, they may thrive in quite a satisfactory way. These thriving and non-thriving areas are sometimes very sharply defined, and this has given rise to a false idea regarding certain trees and shrubs that will really succeed in the more smoky parts when compared with the same species which are found to do well in the outer suburbs. High-lying and fairly open parts of a town are also far more conducive to plant growth generally than the close and confined.

In town planting there is, however, no necessity for the almost monotonous repetition of such trees as the Plane and Lime, or amongst shrubs of the Privet and Lilac, for there are many others that will do almost equally well, and that are quite as ornamental. Probably the fact that such are not well known would form an excuse for their

absence, and it is to be hoped that at least one object to be accomplished by the writing of this book will be a greater interest in, and wider knowledge of, the various species of trees, shrubs, and plants generally that from long experience have been found suitable for planting in the town garden.

CHAPTER II

PREPARATION OF THE GROUND

GENERALLY speaking, the materials with which roadways are made are not only unsuitable for tree cultivation, but positively destructive to vegetation of almost every description. This also applies to our squares, terraces, and open grounds around houses, the soil of which is little other than refuse building materials, and mainly composed of broken bricks and stones, gravel, old mortar, iron, wood, and shavings. In such a medium it is perfectly useless to look for that healthy and vigorous growth which is so essential in street trees, that are still further handicapped by having to do battle above ground with the impurities of a town atmosphere.

Having for a number of years had to

plant trees and shrubs in many parts of London, it was found that in nearly every instance substituting good soil for that found naturally was a first necessity. Many failures in street planting from this neglect of providing suitable soil could be pointed out, the result being that a section of the public has become tired of the subject in consequence of the initial expense and subsequent failures. Too often, also, the important operations of preparing the ground and planting the trees are left in the hands of the surveyor or builder, who has little or no knowledge to fit him for the work, the operation being carried out by labourers who are also perfectly ignorant of what is required or the conditions necessary for successful tree and shrub culture. The consequence is that failure is almost certain, and the trees which were strong and healthy when planted gradually become unhealthy and ultimately succumb to a combination of circumstances which were brought about by the ignorance of the operators.

Another source of failure in street planting is the generally pent-up condition of the roots, for in several cases that have come under our notice lately the planter seemed to think that it was quite enough to cut a small hole in the pavement or street of sufficient size to hold the roots of the tree to be inserted. Were the soil free, as we find in a field, this system might answer; but where the roadway is hard as iron and composed mainly of clinkers and gravel, the case is totally different. Another fruitful source of failure in street planting is placing the pavement in too close proximity to the stem of the tree, and numerous instances could be pointed out where even old and established specimens have suffered irreparable damage in consequence of having the paving brought up too close to the stems.

The roots should always be allowed plenty of breathing room, and to effect this a good-sized space should be railed off around each tree and no pavement laid within it. Gratings may be placed on the surface of the ground

around the tree, should circumstances compel such a course. By adopting either plan, a double benefit to the trees is brought about by allowing free access of water to the roots and preventing an accumulation of noxious gases in the soil, as would be the case if the flagstone or pavements were used.

Where street trees are to be planted, the ground surface should in every instance be thoroughly broken up for a space of not less than 8 ft. square, and to a depth of, say, 4 ft., the inferior soil removed and replaced by that of good quality, preferably of a loamy description, or loam and leaf soil in about equal proportions. Before placing the fresh soil in position, the sides and bottom of each pit should be thoroughly loosened with a pick or fork. By undermining the sides of each pit, a much larger and freer root run will be provided, and this will not occasion so much of the street or pavement to be torn up as if the pits were of equal width at the top and bottom. We have found, in London at least, that the ad-

dition of a small quantity of leaf soil to the loam is highly beneficial to the growth of trees by retaining dampness and encouraging root spread. The newly added soil should be firmly trampled in the pit before planting is engaged in. Sometimes, where the original soil is not of too inferior quality, a small proportion has been mixed amongst the loam and leaf soil, but, speaking generally, this course cannot be adopted.

In squares and gardens where shrub-planting is to be engaged in, a general renovation of the soil is also imperative, and this can best be done by thoroughly trenching the soil to a depth of, say, 4 ft. and adding a large proportion of fresh loam or other soil. Deep trenching and thoroughly breaking up and loosening the soil is a most important factor in town planting, and should never be neglected. Manure is sometimes added to the soil, but it is objectionable from several points of view, and, if used at all, should be thoroughly decomposed and incorporated in small quantity. Good loam and leaf soil

is infinitely preferable, and, where necessary, sandy soil makes a good addition. A little fresh lime added to the soil has been found most beneficial in town planting, and in old and exhausted borders, where the soil has become tainted with chemical impurities, the value of lime or chalk as a cleansing agent is not sufficiently appreciated. Of course, where so-called American shrubs are to be planted—which is, however, rare in London—neither chalk nor lime should be added to the soil. This question of soil is so important that no one planting street trees or shrubs can afford to ignore it, and while the extra cost in providing such is but little, the advantages gained are great.

CHAPTER III

PREPARING THE TREES, PLANTING, FENCING, AND STAKING

TREES intended for planting in towns, and especially alongside streets and footpaths, should be specially prepared in the matter of transplanting and pruning. As tree guards are a necessity in protecting trees by the sides of streets, the trees must have their stems free of branches; therefore the buds and branches on the stems, for a distance of 6 or 7 ft., need to be removed, whilst surplus leading shoots and ungainly branches should at the same time receive attention in pruning. The tree also needs to be frequently transplanted in order that an abundance of fibrous roots may be produced, and every effort made to produce healthy, vigorous specimens suitable for the ungenial surroundings of their

permanent quarters. In street planting it is advisable to use trees that are from 12 to 14 ft. in height; and if these, for some years previous to their final shift, have been specially prepared in the way of frequent transplanting and careful pruning, little fear for their future welfare need be entertained. Autumn or early spring planting is to be recommended, the former time being in most cases preferable. As little time as possible should be allowed to elapse between the lifting of the tree in the nursery and its being transplanted in the new position. Spread the roots out to their full extent around the stem and avoid planting too deeply; the nursery mark on the stem serves as the best guide as to the depth it should be inserted in the soil. Planting too deeply under the mistaken idea that it will secure the tree in the ground is a fruitful source of decay and ultimate death of many street trees planted in the metropolis, and it is not uncommon to see whole avenues of trees that have made little or no progress for many years owing

to this cause. After a tree has been placed in an upright position on the prepared site and the roots properly disposed, the soil should be filled in and trampled firmly both amongst and over the roots. It may be well to warn planters against the pernicious practice of allowing leaves, packing materials, or grassy turf to come in contact with the roots of newly planted trees. In dry situations a saucer-shaped hollow may be left around the stem of the newly planted tree, while mulching applied during dry and warm summers is to be recommended. The planting of shrubs should be carried out with as much care as in the case of trees. It is preferable to trench land in which shrubs are to be planted rather than to make a separate pit for each shrub.

Street trees should be carefully matched—that is, those of similar height and shape used in the same street. Too often such is not the case, as in a new street near the Strand, where some of the specimens are about 10 ft. high, others 15 ft. and 20 ft. high—a very irregular, badly matched row. Many

newly planted town trees are destitute of leading shoots and with ungainly side branches—faults that should never be permitted when choosing specimens for such an important purpose. In choosing trees for street planting, the following rules should be observed:—

1. Stout, healthy, well-rooted and recently transplanted trees should alone be chosen.

2. They should, for the same street, be of nearly equal height and branch spread.

3. Straight-stemmed trees, with stout leading shoots, are to be preferred.

4. The height should range from, say, 10 ft. to 14 ft. or more, and the strength of stem should be proportionate to the height.

5. Trees with wand-like, crooked, or cankered stems should be avoided in street planting.

6. They should be beautiful, shade-giving, and easy of culture.

FENCING AND STAKING.—In order to prevent damage, newly planted trees should be fenced and staked at once. Of fences or

guards there are many kinds: they are made of wood, wire, or iron. The iron tree-guard has many advantages over those of wood or expanded metal, and, being made in two sections, it can be readily placed in position after the tree has been planted. For trees from 12 to 14 ft. high the guards need not exceed, say, 7 ft. in height, and preference should be given to those in which the uprights are bent outwards at the top; for this not only lessens the risk of interference with the branches, but is pleasing in appearance. Sometimes it may not be considered necessary to protect town trees, particularly such as are growing in side streets, or squares, but in every case firm staking is necessary in order to prevent damage from wind.

Wooden tree guards consist of about half-a-dozen poles or uprights, about 7 ft. long, joined together around the tree trunk by means of wire. When compared with those of iron, they have, however, several disadvantages; for they may be climbed with ease and they do not last long. Where it is found

sufficient to stake the trees without having recourse to guards, Ash poles, from 2 to 3 inches in diameter, and 10 ft. high, should be driven firmly into the ground as close to the stem as possible. The tree should be tied with specially prepared tar rope, which should be crossed between the stem and stake to prevent damage by chafing. From time to time it will be necessary to see that the band of string does not become too tight. On rare occasions only is it necessary to stake shrubs, but this is sometimes needed in exposed positions or in the case of shrubs of unusually large size.

WATERING AND AFTER MANAGEMENT.—For a few years after being planted, trees and shrubs will require a certain amount of attention in the matter of watering and mulching during prolonged heat and drought, as also preventing the evils attending excessive wind-swaying by the stakes and moorings becoming defective.

The goat and wood leopard moth, as also numerous kinds of caterpillars, attack newly

planted town trees, particularly the various species of *Pyrus*, Thorns, Willow, and Poplar. They either tunnel into the main stem and render it so weak at the point attacked that it readily breaks across during windy weather, or, in the case of the caterpillars, feed on the foliage and greatly impair the health of the trees attacked. Spraying, hand-picking and shaking are to be recommended in the case of the caterpillars, while, in that of the goat and leopard moth, a small quantity of cyanide of potassium inserted in the mouth of the tunnel will either dislodge or kill the insect.

Watering should preferably be performed in the evening, the ground around the roots being thoroughly soaked, while mulching with freshly mown grass or old straw will greatly prevent the too rapid evaporation of the moisture. In extreme cases binding the stem with a hay rope is to be recommended. In order to prevent straining of the roots and bark chafing, the moorings of trees should receive a periodical examination.

CHAPTER IV

PRUNING OF TREES AND SHRUBS

THOUGH timely and judicious pruning should never be neglected, yet the annual trimming to which many of the town trees and shrubs are subjected cannot be too strongly denounced. To annually prune and elbow in such noble forest trees as the Lime and Plane, in order that the restricted growth may render them suitable for the cramped positions in which they have been unwisely planted, is unreasonable. The Lime and Plane perhaps suffer most in this way, for as soon as they have overgrown the allotted space an annual system of hacking and hewing is resorted to, the result being the formation of great mop-headed protuberances at the points where amputation took place, which not only rob the tree of its natural

appearance, but render it readily susceptible to disease and insect pests. Glaring examples of badly pruned trees may be seen at Kensington, on the Chiswick Road, at Westminster, Cricklewood, and along many of our streets, and in our public parks and gardens.

There is, too, certainly just cause for the numerous complaints which have recently been made regarding the pruning of trees in Grove Park and other of the London districts. But much of this mismanagement is directly attributable to the fact that originally the trees were planted too close together and in much too confined spaces. At Grove Park, which, by the by, is a street 30 ft. wide, situated not far from Denmark Hill, the trees have been planted within 9 ft., in some instances 6 ft., of the trees in the adjoining gardens, the result being that in not a few cases the street trees are overhung by the branches of those in the private grounds alongside. We particularly noticed a Plane tree that had been planted within 6 ft. of a noble specimen of the Acacia which was fully 50 ft. high, the

branches of which extended 12 ft. beyond the stem of the street tree. In Grove Park all the Planes have been cut back to a uniform height of about 15 ft., and, to say the least of it, the work has been carried out in a way that cannot be commended, the points at which pruning took place being in many instances rough, jagged, and unpainted. Where amputation of a branch takes place, the wound should in all cases be smoothly dressed over and tarred or painted to prevent the ingress of water and consequent decay. Around Camberwell Green, too, the trees have been sadly mismanaged in the matter of pruning, nearly a hundred of these presenting the appearance of mop heads of the most hideous and unnatural description. In this case the trees have been reduced to a uniform height of about 16 ft., and, as pruning has taken place annually at the same points, the many mop-headed protuberances so formed have a most objectionable appearance. But this is only one case out of many that could be cited of

trees suffering irreparable damage, and presenting an ugly and most unnatural appearance, by ill advised pruning which, in not a few instances, is little short of tree-murder and vandalism.

Some excuse might be offered for planting our largest-growing forest trees in cramped and unsuitable positions were there no other species of smaller growth available; but the various kinds of *Pyrus*, Mulberry, *Catalpa*, Dwarf Acacias, Sumach, *Prunus*, *Cratægus*, and others are all well suited for town planting. Where ample space is available—such as on the Thames Embankment and other wide promenades and streets, or where interlacing of the branches is not a serious drawback—by all means let the larger-growing trees be planted; but where the streets are narrow and necessity compels planting within a few yards of buildings, the smaller - growing species are preferable. Numerous instances could be pointed out, as at Gray's Inn Road and Shaftesbury Avenue, in which Plane trees have been planted within

9 or 10 ft. of houses and other buildings, the result being that in a few years heavy pruning becomes a necessity, the natural beauty of the trees is destroyed, and, worse still, a repetition of the trimming must be carried out at frequent periods. A point, of the greatest importance in town planting, is suiting the trees to the positions they are to occupy. The Lime is perhaps one of the most cruelly treated of all suburban London trees; for the lopping and beheading to which it is annually subjected, and which it tries bravely to support, strikes every lover of the natural with feelings of regret and shame that so beautiful and noble a tree should be so tortured and disfigured. For the first ten years after being planted in its restricted space, it looks everything that could be desired, but when the confined boundary limit is attained—the windows darkened, the patch of garden rendered useless by the overhanging branches, and the pedestrian on the footpath annoyed—then comes the retribution, and, the saw and the pruning knife being

brought into request, the stalwart, beautiful sapling is elbowed in; it becomes mop-headed, or contorted into some other unnatural or ungraceful shape. By planting at the first such moderate-sized trees as the *Robinia viscosa*, the Mulberry, Mountain Ash, and Beam Tree, Indian Bean (*Catalpa*), or the beautiful flowering Almonds, Cherries and Thorns, all this would be avoided. The Plane tree, too, is badly managed in many of the London thoroughfares, and when, through indiscriminate planting, pruning of the branches has to be resorted to, this operation is usually performed in the most slovenly and unscientific manner, and has in not a few instances led to a diseased and unhealthy state of the trees operated upon. There are cases, however, where pruning is justifiable, and the abuse of a system should furnish no argument against its legitimate use. In the public parks and gardens the removal of weighty branches from such trees as the Elm and Poplar, that frequently break during still warm weather and endanger the lives of visitors, is not only

admissible, but a duty that should never be neglected by those in charge. This also applies with equal force to diseased and hollow branches and stems, which are fraught with danger to the public. As to whether or not dead wood should be removed in quantity from our old Oaks and other trees, there is a diversity of opinion, though it cannot be denied that the careful pruning of such is highly beneficial whether from the point of the health of the trees or safety of the public, who may frequent their shade. It is certain that in some of our town parks and gardens there exists an undue quantity of dead and dying wood which may be attributed to natural decay, the poor quality of the soil in which the trees are growing, or to long-standing neglect in the matter of non-attention to wounds which have been caused by wind-broken limbs and branches or other injuries. Such trees would be greatly improved, both in health and appearance, by the removal of the dead branches and attention being paid to old wounds in order to

prevent the ingress of water, the decay and death of not a few trees being directly attributable to this cause. That dead and dying wood will induce the attacks of injurious insect pests, such as the goat and wood leopard moth, which also attack healthy trees, is well known, and was exemplified in some of our London parks lately where Thorns and various species of *Pyrus* were attacked and injured by the caterpillar of the leopard moth, which was bred in the adjoining old Chestnut trees. The latter part of May or beginning of June is perhaps the best season for pruning the majority of hard-wooded trees, as during that time the motion of the sap is most vigorous, and, in consequence, the wounds caused by amputation heal quickest. There are a few exceptions—the Birch, Maple, and Sycamore—where, on account of profuse bleeding, pruning is best postponed till after the leaves have developed. In cutting or shortening small branches a sharp pocket-knife will be found most convenient; but, when large and weighty limbs have to be

removed, they should first be cut through at any convenient distance from the main stem and then close to the trunk. Under-cutting by a few draughts of the saw in order to prevent the bark and wood from tearing when the severed branch falls away is to be recommended. In order to prevent water lodging on the freshly cut surface, the face and edge of each wound should be neatly dressed and made quite smooth by a sharp knife or adze and then painted or tarred over. When cutting over an upright growing branch never cut on the horizontal, but always in a sloping direction, so that the rain may pass off quickly. Much mischief has been done by the pruning knife and saw in the hands of inexperienced workmen—a fact that will be patent to every interested person who watches the operation as being carried out by the workmen of some of the city and suburban councils. When conducted with care, on sound principles, the effect of pruning on standard trees should be rather beneficial than otherwise, whereas when done

by inexperienced workmen the operation has disastrous results.

Generally speaking, shrubs are pruned with little or no consideration as to whether they will be benefited by the operation. While symmetry and regularity of outline are to be admired in a shrub, these qualities should never be gained at the expense of natural grace and production of flowers. The judicious pruner will, therefore, aim at preserving the peculiar habit of each shrub as far as possible, while interfering but little with the production of flowers. The various species of *Deutzia*, *Forsythia*, *Philadelphus*, and *Weigela* flower on the wood of the preceding year's growth; therefore such shrubs should be pruned immediately after the flowering season—say in June, but never in spring or winter—at least, if the production of flowers is to be taken into account. Again, the various species of *Syringa*, *Spiræa*, *Lonicera*, and *Hibiscus* may safely be pruned during winter, the flowers being produced on the young wood; while *Hydrangea paniculata*

grandiflora must be severely pruned in early spring, for only by so doing will the greatest wealth of flowers be produced. *Chimonanthus fragrans* should be pruned in February; while the various species of *Ceanothus* should not be touched till all danger of frost is past. *Kerria japonica* should be pruned in autumn, when old wood may be cut away.

All pruning operations should be carefully carried out with a sharp knife and not with the pruning shears, the point of amputation being always close to an eye or bud. Too severe pruning should be avoided, a judicious thinning out of the branches being far preferable to indiscriminate shearing and cutting back.

CHAPTER V

THE MANAGEMENT OF DECAYING TREES

THE question of the management of old and decaying trees in urban and suburban districts is one of considerable importance, and which, possibly through ignorance, rarely receives the attention it deserves.

From various causes, apart from atmospheric conditions, such as poverty or poisoning of the soil, attacks of insect and fungoid pests or accident to limb or stem, old trees may become stag-headed, hollow and unhealthy and, if not promptly attended to, may die out altogether. Probably the most prolific cause of decay arises from non-attention to wounds on the stem and larger branches which have been brought about by the wind or other agency. Where a branch has been broken off, the greatest care is necessary to prevent rain entering at

the wound and so setting up decay; and, to avoid this, the point at which the branch was broken over should be made smooth with a pruning knife or saw and covered with an antiseptic to prevent the ingress of damp as well as aid in rapid healing. Old Elms suffer most in this way, less so the Oak, Beech, and various other trees; indeed, there are few public parks in any of our larger towns where decayed and dangerous Elm trees are not to be found, the majority of which have become diseased and rotten at the core by the ingress of water at the point where a branch had got broken off by the force of the wind and have received no attention in the way of pruning and painting.

The simplest and most successful method of dealing with hollow trunks is to clean out carefully and thoroughly all dead and decaying matter, and when quite dry the interior of the shell may be painted with creosote; then fill up with a composition of one part of Portland cement to three of clean gravel and

sand, the surface coating containing a larger quantity of cement. As cement usually shrinks from contact with the wood, a coat of tar between these will be found useful, and cracking of the concrete surface may be prevented by an occasional coat of paint, the colour of which should imitate, as nearly as possible, that of the natural bark. In trees where decay is not too far advanced, and where the bark is likely to grow over the artificially filled hollow, the concrete should only be brought up flush with the healthy bark. On examining lately several large Oaks and other trees which were treated as just described some twenty years ago, the results quite justify the method adopted.

Those having charge of trees should never allow the stems to be covered with soil, neglect of which has been the direct cause of the decay and death of many noble specimens throughout the country. Where it cannot be avoided, and the instances are few, dishing will assist—that is, the soil heaped around the trunk should be formed into

saucer-shape, the rim or edge being at a distance of 6 ft. from the tree trunk.

Where poverty of the soil is the cause of early decay in a tree, much good may result from carefully removing the existing soil from amongst the roots and substituting that of better quality, preferably of a loamy description. A small quantity of thoroughly decomposed manure may be incorporated with the soil, but for trees generally the amount used should be very small. In removing the exhausted soil it is a good plan to cut a trench, say 2 ft. or 3 ft. wide, just outside the root boundary and then to carefully work inwards amongst and beneath the roots with a pick or fork, the greatest care being exercised that no damage is caused to these when carrying out the operation—which is simple enough in the case of young trees, but very difficult where old specimens with long stout roots have to be dealt with. The new soil should be carefully rammed in amongst the roots and made perfectly solid.

Of insects that are injurious to trees, but

especially such as are in an unhealthy condition, the goat and wood leopard moth (*Coccus ligniperda* and *Zeuzera æsculi*), the Elm bark beetle (*Scolytus destructor*), and Oak leaf roller moth (*Tortrix viridana*) are those that give most trouble in our larger towns and cities. All these are plentiful in London and frequently much damage has been done and many fine old trees rendered unhealthy, or killed out by their depredations. The Elms suffer from the attacks of the goat moth and bark beetle, while the wood leopard moth has caused incalculable damage to Chestnut, Thorn, and various members of the *Pyrus* family. Oaks are frequently defoliated by the Oak leaf roller moth which appears in certain seasons in vast numbers and feeds on the leaves of the tree. Where a large number of trees is attacked little can be done, but in the case of isolated standard specimens much good can be brought about by spraying, hand-picking and shaking the trees, the moths being collected and destroyed.

The goat and wood leopard moth, by tunnelling into the stem and branches, render the trees, particularly young specimens, liable to snap across at the point where the grub entered; and in our London parks and gardens young Thorns, Chestnut, Poplar, the Beam tree, and other species of *Pyrus* have suffered greatly in this way. As before stated, by placing a small quantity of cyanide of potassium in each tunnel, the insect will quickly be got rid of.

The Elm tree destroyer forms galleries beneath the bark, usually of unhealthy trees, and can only be kept in check by carefully burning all infected specimens. Of late we have noticed Beech trees both in urban and suburban districts of London attacked by the Beech Coccus (*Cryptococcus fagi*), an insect that is alarmingly on the increase in this country. Paraffin or petroleum emulsions will destroy the insects; and scrubbing affected parts with a brush and soft soap is to be recommended.

FUNGI ON TREES.—These are certain signs of decay or the bad condition of a tree.

Some affect only one tree, others extend to several species. A most destructive enemy of the Oak is *Polyporus sulphureus*; less so *P. quercinus*, while the well known dry rot is traceable to *Merulius lacrymanus*. The Beech has several pests, including *Polyporus cuticularis*, *Fistulina hepatica*, and the curious and handsome *Hydnum coralloides*, which is fairly plentiful in our larger centres of industry.

The London Elms are attacked by *Polyporus squamosus*, which is scaly above and of a stiff leathery consistency. The Willow and Poplar suffer from *Polyporus igniarius*, as also the common Plum; while *Polyporus hispidus* affects the Ash. Two other beautiful fungi grow on the Ash, viz.:—*Lentinus tigrinus* and *L. Dunalii*.

The curious Jew's ear (*Hurtelea auricula-Judae*) is fairly common on the Elder and perhaps more so on the Elm, all over London. The Lime is fairly free from attack, although *Polyporus vegetus* sometimes afflicts it.

Collecting and burning all diseased parts,

whether whole trees, branches or bark, is the only means of keeping both insect and fungoid pests in bounds.

SUPPORTING HEAVY AND DISEASED BRANCHES.—The lifetime of many old trees in our towns and cities has been greatly extended, and their natural beauty retained, by the supporting of heavy and diseased limbs with judiciously arranged iron bands and connecting rods. This is particularly the case with old specimen Elms, Mulberries, and the Catalpa, the heavy branches and brittle timber of which is apt to become diseased and hollow and readily wrenched from the main trunk during stormy weather. To obviate this is a simple matter by carefully joining such branches as are likely to fall away either to one another, if on opposite sides of the tree, or to the main stem by means of chains or bands and light connecting rods. Chains, though often used, are for various reasons to be avoided, the flat iron band lined with leather being far preferable and much less likely to cut into the

bark and wood. The bands are usually made $2\frac{1}{2}$ in. wide and of the particular shape of the branch to be encircled, each being in two parts, which are joined together by nuts and bolts. This not only allows the band, which is made of much larger circumference than the branch so as to allow of the insertion of a leather collar between it and the wood, to be readily placed in position, but to be slackened at any future time should necessity so demand. The bands, whether around two opposite branches or the trunk and a branch, are then connected by a light iron rod and fastened to the bands at the points where the bolts and nuts are placed. The connecting rod, which is divided into two parts and joined together by a swivel and screw for convenience in tightening, is usually made of round iron about $\frac{1}{2}$ in. in diameter. It is usually simple enough to join a branch to the main trunk, but in the case of connecting up two branches so that one may act as a support to the other, the greatest care and good judgment will be required.

CHAPTER VI

THE ADVANTAGES OF TOWN TREES

WHETHER from an ornamental or sanitary point of view, the advantages of judiciously planted trees and shrubs in our larger centres of industry can hardly be over-estimated. That a quantity of healthy growing foliage has a wonderful effect in purifying the atmosphere is a recognised fact, and certainly far more than compensates for any damage to health that might be occasioned by its decay in autumn; while the cheerful aspect produced by trees and shrubs when planted in our streets and squares renders them of special value and the greatest importance. In connection with architecture, too, the beautifying and softening effect of trees is gradually being admitted, though for long

the aversion to change, which so unfortunately characterises the average British mind, kept street planting greatly in the background in our towns and cities. For years the necessity for judicious tree planting along the Thames Embankment was addressed to official ears in vain; indeed, it was only when the call became too loud to be disregarded that practical steps for carrying out this most important of London's tree planting schemes were set on foot. When Loudon built his house in Porchester Terrace, Bayswater, he planted a Sumach by the path side opposite to his residence—an action which was met by prompt and triumphant opposition on the part of the district surveyor, whose complaint was that it was likely to shade the pathway and keep it damp. But even his neighbours declared that it would be unpleasant to pass under its drip, in showery weather, and so poor Loudon, who had done so much to further our knowledge of trees and planting, was forced to grub out his Sumach. But even at a later date the opposition to street plant-

ing was considerable, and it was only after attention had been called to the beauty of Continental towns, where trees were largely used in the squares and streets, that the adornment of London in a similar way was countenanced. Now, however, with a rage for tree planting, it is to be hoped that our larger towns and cities will come in for a share of attention.

Bearing on the question of trees in towns, Dr. Phené, at the Social Science Congress at Edinburgh, remarked as follows:—"To the occupants of houses in streets having a northern aspect, the glare of reflected light is injurious; but the effect would be much modified by the coolness to the eye produced by the green of trees. In ancient surgery persons having weak or declining sight were advised to look at the emerald. In the old style of building the streets, being narrow, were cooler, both from the sun not being able to penetrate them with direct rays, and less subject to noxious exhalations, from the scouring and purifying

effects of the searching air to which narrow streets were subject, so that, while there was no space for trees, there was also less necessity. Wide streets, on the contrary, are hotter, and require the shade of trees to cool them, and, as in the case of London, which has so far done to a great extent without trees in its streets, not only are modern streets compulsorily wide, but the enormous increase in metropolitan buildings renders every sanitary question one of importance; and the chemical properties of trees, as shown by experiment, give them an important standing on that ground, irrespective of ornament or the pleasure they produce."

CHAPTER VII

THE BEST TREES TO PLANT

THE LONDON PLANE (*Platanus orientalis acerifolia*) stands first in the category of select town trees, as it grows vigorously, and is well adapted for withstanding smoke and other impurities in the atmosphere. Repeated experiments have clearly proved that in London this tree flourishes better than any other, and a visit to the parks, public squares, or the Thames Embankment will substantiate the statement. There is a fine old tree at Cheapside, and an equally beautiful specimen, which has hardly room for perfect development, in the Court of Stationers' Hall, Ludgate Hill. Other notable specimens exist in Staple Court, High Holborn, and in Dean's

Court, St. Paul's. There being a diversity of opinion as to which variety of Plane it is, it may be stated that, on a careful examination of a large number of specimens, the variety *P. o. acerifolia* was found not only more commonly distributed, but likewise better suited for town planting than the typical *P. orientalis*. This valuable variety is readily distinguished from the American Plane (*P. occidentalis*), with which it is not infrequently confounded, by the many fruit "balls" which are attached to each peduncle, the fruits of *P. occidentalis* being for the greater part produced singly. But not only because it succeeds so well as a town tree is the Oriental Plane much sought after; the large size to which it grows, coupled with the handsome, finely-cut leaves and easy habit of growth, render it one of the most ornamental of trees. Another good quality is that it succeeds extremely well in soils of very opposite description. In midwinter the beautifully marbled stem of grey and yellow caused by the shedding of the bark in large irregular

patches, renders the Plane one of the most picturesque of our woodland trees. In Portman and Manchester Squares specimens have attained to a size rarely exceeded by the tree when growing under more favourable atmospheric conditions. Other examples of equally rapid growth and development are the beautiful trees in Bedford, Russell and Gordon Squares, also in Lincoln's Inn Fields, many being fully 70 ft. in height, with a branch spread of 80 ft. and a stem girth of from 5 to 6 ft. at 3 ft. from the ground level. No doubt in all these cases the healthy condition and giant proportions to which they have attained are mainly due to the care with which the trees were planted and to good management in timely pruning and providing ample room for the development of root and branch. But in many other of the London squares, where the atmosphere is by no means pure, the Plane tree may be seen in all its glory of leaf and branch. It is, however, not only in the squares and gardens of the great metropolis that the Plane thrives in a satis-

factory manner, but even where the tree is hemmed in by buildings. There are many examples at Cheapside, in the Tower of London, at Ludgate Hill, and in not a few of the old and disused churchyards, where the heated, dusty, and otherwise impure atmosphere is almost stifling. The main points to be attended to in producing healthy, well-developed specimens of the Plane are providing a suitable medium in which to plant the tree, careful pruning in the matter of ungainly branches and leading shoots, and allowing a clear space for the spread of the branches.

It has long been suspected that the Plane tree causes throat and lung troubles, and the notes by Lord Walsingham and Dr. Henry in *The Times* still further heighten the suspicion. Several instances have come under my own notice of throat troubles being attributed to the presence of the Plane tree; and a notable case in which some of the occupants of an official residence at a well known public building in the West Central district of London

have required to leave their abode owing, it is thought, to the presence of Plane trees around the buildings, is at present being inquired into. Not only do the seeds give off the spiculæ that so irritate the throat and eyes, but it is pretty evident from recent observations that the minute hairs given off by the pubescent leaves at an early stage of their growth are likewise dangerous to health.

Amongst Plane trees growing in very confined positions, the following may be mentioned:—

THE WOOD STREET PLANE TREE.—This famous tree, which stands at the left-hand entrance to Wood Street from Cheapside, marks the site of St. Peter in Chepe, a church which was destroyed by the Great Fire (1666). The terms of the leases of the houses at the west-end corner are said to forbid the erection of another storey or the removal of the tree. This tree is in a healthy condition, as is evidenced by the growths which have been made since it was pollarded about three years ago. It is grati-

fyng to know that this pruning was, unlike much of such work in London, carried out in a practical and sensible fashion, and has interfered but little with the original appearance of the tree. The smooth, well-rounded stem rises for 30 ft. without a branch, the diameter being about a yard through at breast high. As late as 1845 rooks built their nests in this tree.

THE PLANE IN STATIONERS' COURT.—This is a magnificent specimen, though growing in a very cramped and confined position, the branches on all sides nearly touching the surrounding buildings. The tree is in excellent health. It has a large, well-formed stem, but unfortunately, owing to "snag-pruning," the outline has been rendered somewhat unsightly. This Plane Tree, which grows in the Court of Stationers' Hall, Ludgate Hill, is much prized by the residents around.

THE DEAN'S COURT PLANE TREES.—Though growing in a very confined and dusty position, these two Plane trees have attained

to a height of fully 60 ft., and are healthy and well developed.

IN STAR YARD, by the Law Courts, there is a large and well developed Plane tree, which is growing in so cramped a position that it has hardly room for perfect development of either root or branch. In Amen Court there is also a large Plane tree growing contiguous to lofty buildings. Taking everything into consideration, I doubt whether any other forest tree is of equal value with the Plane for town planting.

THE AILANTHUS or TREE OF HEAVEN (*Ailanthus glandulosa*) flourishes in many a London street; indeed, next to the Plane, it is, perhaps, the most commonly cultivated tree both in urban and suburban districts of the metropolis. By reason of its rich green, spreading foliage, the Ailanthus is a great favourite, the leaves in many cases reaching to a length of fully 2 ft. This tree has been planted largely in many Continental cities. In some of the most smoke-infested parts of London, as in the Lambeth Borough Recre-

ation Ground, and throughout the East End, the *Ailanthus* does remarkably well, and grows with a vigour that is excelled by no other species; while the noble specimens in Bloomsbury and other public squares testify to its capacity for withstanding the impurities of a town atmosphere. The greenish-white inconspicuous flowers are freely produced, and are succeeded by innumerable fruits resembling the keys of the Ash, but of a reddish-brown colour, which impart to the tree a hue that, unfortunately, is seldom seen in this country.

THE WEEPING ASH.—Within a stone's throw of Liverpool Street Railway Station, and hemmed in by bricks and mortar, may be seen one of the handsomest and healthiest members of the Ash family that could probably be found in the great metropolis. This particular specimen in question is the dwarf weeping Ash (*Fraxinus excelsior pendula*) which forms during summer a hemispherical head of the brightest pea-green foliage—a glaring contrast to the too oft-repeated

THE WEeping ASH



THE WEEPING ASH

TO THE
HONORABLE
MEMBERS OF THE
LEGISLATIVE ASSEMBLY

yellowish hue of the London Plane. But this is not the only place in town where, during the past summer, we have been charmed with the delightful freshness of the tree in question; for in many of the most smoke-infested quarters, and where even the famous Plane looks sear and sickly, the Weeping Ash forms a noble specimen of the most refreshing green. Good examples of this tree may be seen at Bloomsbury and Holborn Viaduct, as also in the East end of London and in the foul air of Lambeth. There are many forms of the so called Weeping Ash, but that of dwarf growth is most to be recommended for doing battle with the deleterious effects of a city atmosphere. It likewise withstands long-continued heat and drought in a most remarkable manner, in that respect being only equalled by the False Acacia and Indian Bean—two of the very best trees for dry and warm summers.

THE BLACK POPLAR (*Populus nigra*).—Next to the Plane amongst forest trees, I consider the Black Poplar the most valuable

for planting in smoky towns. As a proof of this, there are to be found numerous fine specimens of the tree in a flourishing condition, and clothed with the most healthy foliage in some of our largest cities—to wit, London, Glasgow, Liverpool, Warrington, and Sheffield. The Black Poplar may be somewhat stiff in outline, but there is, nevertheless, an air of grace about it that is wanting in any other tree I can bring to mind. It is a tree of the readiest culture, while, as to its rate of growth, a specimen of 100 ft. in height has attained to that size in less than sixty years. The wood, unless for a few special purposes, such as cart-bottoms, brakes, &c., is not of great value; but the tree is, nevertheless, a profitable timber producer when grown in suitable soils. Good examples of how the Black Poplar succeeds in London may be seen at Gray's Inn Road, Lambeth, and at St. Giles-in-the-Fields.

THE CANADIAN POPLAR (*P. canadensis*) and its variety, *P. c. nova*, are excellent trees for planting in smoky localities. The former succeeds admirably—in the very centre of

Sheffield, in the old parish churchyard, where for hundreds of yards away not a particle of living vegetation is to be seen. The variety *nova* is a very superior tree for street planting, it being far more ornamental and of more rapid growth than the Black Italian Poplar, and equally reliable for retaining a healthy and flourishing condition under the adverse circumstances connected with a town atmosphere. How well it succeeds may be seen in the beautiful avenue that was formed of it and the Oriental Plane some years ago at Wimbledon Park.

THE ABELE POPLAR (*Populus alba*) grows with great freedom where subjected to smoke and foul air. In the very heart of our largest towns, it may be seen flourishing in a manner that is almost incredible. It is a pretty tree, the distinctly cut, ample leaves, with their cottony under-surface, being at all times, but especially when agitated by the wind, most interesting, and causing the tree to rank amongst the most ornamental of its kind. It is readily propagated, transplants

freely, grows rapidly, and is neither subject to disease nor particular as to the soil in which it is planted.

THE LOMBARDY POPLAR (*Populus fastigiata*) is probably, next to the Plane, the most common of our London trees. It succeeds admirably even in the foulest atmosphere, while it is about the least particular, as regards soil, of any tree that could be mentioned. Whether the Lombardy Poplar is a distinct species or only a form of *P. nigra* opinions differ, but with a wide knowledge of the tree as planted in our London streets and squares I am inclined to think that it is only a well-marked upright habited variety of the Black Italian Poplar. In any case, it is an excellent tree for smoky localities, thriving well even where chemical fumes are present in the atmosphere, while its strict habit of growth renders it peculiarly suitable for confined positions or for using as a screen or hedge tree. In and around the great metropolis, wherever a screen fence is required, this Poplar is called into request, and

the number annually planted in London probably exceeds that of any other species. Rarely does it show signs of distress, nor is it subject to disease or insect attack, while the pea-green foliage is always fresh and pleasing. Its thriving well in the poorest quality of soil is another great recommendation, and it is readily propagated and grows quickly.

THE BALSAM POPLAR (*P. balsamifera*) is far more commonly cultivated throughout London than is generally supposed, and the numerous specimens that are found even in the most dusty and smoky districts show how suitable it is for town planting. Objection has been offered to the Balsam Poplar for dusty localities owing to the leaves, and particularly the buds, being covered with a sticky, resinous exudation to which dirt becomes readily attached; but we think that this fault can well be overlooked when the suitability of the tree for withstanding the deleterious effects of an impure atmosphere is taken into account. The leaves, too, are

deliciously fragrant. Good examples of the Balsam Poplar may be seen by the Commercial Road, in Soho Square, and in many other parts of London.

THE INDIAN BEAN (*Catalpa bignonioides*). —For various reasons this fast-growing tree is to be recommended for planting in smoky localities. It grows with vigour in many smoky centres, as in the Middle Temple Gardens, near the Houses of Parliament, in Manchester Square, and at Chiswick and Camden Town, is a tree of handsome proportions, and when fully established, flowers freely. The violet-white of the petals of the flowers is well set off by the purple and yellow of the throat. A valuable trait in the character of the Indian Bean is that, should accident befall it, and the stem get injured, numerous strong suckers are produced, which, as they grow with great rapidity, soon take the place of the original. Few soils come amiss to it.

Amongst remarkable trees of this kind in London is that known as BACON'S CATALPA.

This fine old tree, which is said to have been planted by Bacon, is growing near the centre of Gray's Inn Gardens. It is of unusual appearance owing to having been partially uprooted many years ago. The stem, which is about 18 in. in diameter, rests on the ground for about 9 ft. of its length, and has, fortunately, been well preserved by filling up the hollow portions with cement, while the far-spreading heavy branches have been supported by props and thus prevented from breaking away from the main stem. Though there are many dead and dying branches on the tree, yet its general health is good, and, should no accident befall it, it will live for many years to perpetuate the memory of the great writer. It produced flowers freely in 1909. Perhaps it may be of interest to state that the Gray's Inn Gardens were laid out under the direction of Bacon towards the close of the sixteenth century.

THE FALSE ACACIA (*Robinia Pseud-acacia*).—Probably no other tree can compare with the False Acacia for withstanding the

prolonged heat and drought of our larger centres of industry—a fact that has been brought forcibly home to us by the behaviour of these both in France and England during unusually warm summers. When the whole of the ordinary vegetation is burnt up, the Lime and Elm looking seared and sickly, and the holly dying out in quantity by the long-continued drought and heat, the Acacia stands nobly out in all its freshness of branch and leaf, and, if anything, blooms all the more freely for the scorching and want of moisture to which it is subjected. Almost by the hundred can the False Acacia be seen in London and many other English towns, thus proving that it is one of the most valuable trees that we possess for withstanding the injurious effects of an impure atmosphere. It is likewise one of the most ornamental of trees, the great wealth of pure white flowers and beautiful pea-green foliage being of the richest description. What renders this Acacia of greatest value as a town tree is that it retains its rich verdure till well on in

autumn. It grows freely in almost any soil, reproducing itself in suitable positions, and soon forms a handsome tree of almost giant proportions. The most suitable for town-planting are the upright-growing and free-flowering kinds. The varieties known as *Decaisneana*, *microphylla*, *macrophylla*, *sophoraefolia*, *inermis*, and the upright-habited are most to be desired.

THE LIME (*Tilia Europæa*).—Where the situation is not too confined, and where soot and smoke do not abound, the Lime may and does succeed; but when used in the worst parts of the metropolis, it soon shows signs of distress, the tips of the branches dying off, and the whole tree sooner or later showing the fierce struggle it has to endure with smoke and fumes. As an avenue tree, in the more airy and pure parts of a town, the Lime has certainly few equals, its general contour and the pleasing shade it affords being points of special recommendation.

PRUNUS MOLLIS (or, more correctly, *P. Americana mollis*) has few equals for plant-

ing in smoky towns and is a black fruited variety of the species. It grows to about 20 ft. in height, with serrated leaves and whitish flowers, the bark having a mottled appearance by reason of the small scale-like growths. It is of wonderfully stout and rapid growth and seems to defy heated impure air with impunity. Both in Edinburgh and London this variety does well and is to be strongly recommended for general town planting.

THE BIRD CHERRY (*Prunus Padus*) may be classed amongst the most valuable of our town trees. It is a robust-growing and bright flowering small tree. Few soils come amiss to it, and, even where it is hemmed in by taller-growing trees and constantly subjected to their drip, it grows and blooms with the greatest of freedom. In many of the back streets and slums of London may be seen well grown specimens, which clearly demonstrate how well suited it is for withstanding smoke and dust.

THE SUGAR MAPLE (*Acer saccharinum*)

THE MULBERRY IN LONDON



THE MULBERRY IN LONDON

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is a handsome, hardy, and fast-growing tree of moderate dimensions, and one that can justly claim a place in any list of town trees. It will not succeed where constantly subjected to smoke and fumes, but planted in the suburban districts it soon forms a really handsome and distinct tree.

THE COMMON MULBERRY (*Morus nigra*) and the white-fruited (*M. alba*) may be seen growing satisfactorily in several of the old gardens and nurseries of the metropolis, and where they are now buried alive, as might be said, in stones and mortar. That they are excellent town trees will be admitted by every one who sees the fine specimens in Liverpool and Manchester. In London, too, there are many fine old trees of the Common Mulberry, as in several of the public squares and gardens at Bermondsey and Stratford and throughout the East End generally.

THE HONEY LOCUST (*Gleditschia triacanthos*) is a tall, spreading tree, one of great beauty, and a very suitable subject for

planting in smoky localities. In many of the worst smoke-infested parts of London and Manchester are seen goodly specimens of this handsome tree—not poor, miserable trees, but, from their great size, wealth of foliage, and general appearance, betokening perfect health amid their rather adverse surroundings. It grows very freely even when rather carelessly planted, and in soil of inferior quality. In autumn the long fruit-pods give to the Honey Locust a distinct and curious appearance.

THE SYCAMORE (*Acer Pseudo-platanus*).—This tree may be classed as amongst the most useful for planting in smoky towns. In Warrington, where the noxious emanations from alkali and other chemical works are most disastrous in their effect on trees and shrubs, the Sycamore is one of the few that grow satisfactorily. Being a rapid and strong grower, it is thus seen to be, for a certain time at least, unaffected by its inimical surroundings. The variegated variety would seem from recent experiments to be prefer-

able and better adapted for smoky localities than the normal form.

THE WHITE BEAM TREE (*Pyrus Aria*).—In many of the confined spaces in London, Liverpool, and Glasgow, the White Beam tree grows luxuriantly and produces annually great quantities of its brightly coloured berries. The creamy white of the under-side of the leaves is particularly attractive when agitated by the wind, and the wealth of small white flowers is a treat to behold. Few trees are more readily suited with soil, for it may be found in a state of nature growing on dry limestone rocks, where there is scarcely a particle of soil.

SOPHORA JAPONICA is worthy of recommendation as a tree that is admirably suited for planting in towns. It is of large and rapid growth, with elegant dark green pinnate leaves. Being a native of China and Japan, it may not be perfectly hardy in the colder portions of the British Isles, but it succeeds well in Southern England and Ire-

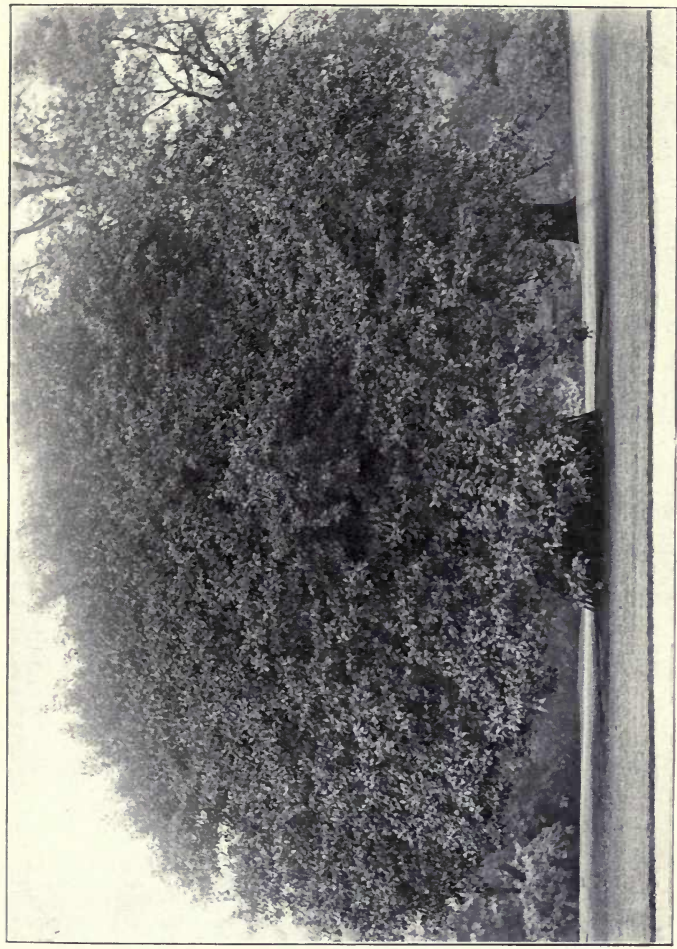
land, and it thrives admirably in the most smoke-infested parts of London.

THORNS of various kinds succeed in town parks and gardens, but they are not to be recommended for the most smoky and confined localities. In Glasgow, however, I have noticed how well suited for planting in the squares and public gardens many forms of the Thorn are; indeed, even in London, and where smoke and dust are by no means wanting, they gladden the eye with their wealth of flowers and bright green leaves. The single and double scarlet would seem to be best adapted for withstanding soot and smoke; and these may not unfrequently be seen of large size and in perfect health.

THE TANSY-LEAVED THORN (*Cratægus tanacetifolia*) is another excellent member of the family for town planting. A noble example may be seen near the entrance to the Glasgow Botanic Garden and in various of the London parks.

THE COMMON HOLLY (*Ilex Aquifolium*).—On the whole the Holly cannot be considered

THE BEAM TREE, FOR SMOKY TOWNS



THE BEAM TREE, FOR SMOKY TOWNS

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a suitable shrub for smoky localities, though occasionally one sees it in a fairly healthy condition, but only when growing under exceptionally favourable conditions, as in the most open and airy of our town squares and gardens. Take, as examples, the Holly hedge around the gardens in Cavendish Square, where the atmospheric conditions are by no means bad when compared with other parts of London, and it must be admitted that the trees wear a wretched, blackened, rusty appearance, though they are able to survive and eke out an existence under their unfavourable conditions. Even in our larger parks, where the grounds are open and airy, the Holly is by no means at home, and, though able to survive, cannot compare in point of beauty with those grown in the country.

Of course, as we recede from the smoke and other impurities of the confined town atmosphere, the Holly gradually improves until—say in Greenwich or other parks on the outskirts of the metropolis—it may be con-

sidered as a fairly satisfactory shrub; but in the more confined parts of London it cannot be recommended.

The Dwarf variety of the Common Holly may be considered as probably better than the species for London generally, though both *Ilex Hodginsii* and *I. Balearica* (the Minorca Holly) have distinct claims, particularly the former, on the town planter. *I. Hodginsii*, owing to its strong constitution, sturdy habit and smooth leaves, would appear to do well under unfavourable conditions, and, when established, wears quite a presentable appearance even in moderately smoky localities. All the Hollies want a light, but rich loamy, soil if their best qualities as town shrubs are to be brought out, and, as they bear pruning well, are equally adapted either as standards or hedge plants. A distinct disadvantage with the Holly is that soot and smoke adhere persistently to the leaves.

THE ENGLISH YEW (*Taxus baccata*) can hardly be recommended as a suitable tree for smoky localities, although in suburban dis-

tricts it grows freely, and there forms a dense, healthy dark green mass. From this it must not, however, be inferred that the Yew cannot survive in smoky towns, for it grows freely wherever it is not subjected to an inordinate amount of atmospheric impurities. Soil of fairly good quality should be used when planting the Yew, particularly where the surroundings are unfavourable.

THE HORSE CHESTNUT (*Æsculus Hippocastanum*) and the English Elm (*Ulmus campestris*) may be seen in a fairly satisfactory way in many town parks, but only where they are not exposed to smoke and soot to any great extent. In confined spaces both these trees soon show signs of distress, the points of the branches gradually becoming unhealthy and the trees ultimately dying off prematurely. Taking everything into consideration, neither of these trees can be recommended for planting in smoky districts, though in the more open parts, as in Hyde or Regent's Park, they last for a long time and attain to good old age.

THE HOP HORNBEAM (*Ostrya carpinifolia*) has been proved an excellent tree for planting in smoky districts; indeed, for such a purpose it stands almost first on the list. It is a much-branched, round-headed tree, with cordate-ovate, acuminate leaves, and attains to a height of 50 ft. By reason of the resemblance of the female catkins to hops and the leaves to those of the Hornbeam, it has acquired the very descriptive name of the Hop Hornbeam. The flowers are greenish white.

THE BIRCH, WALNUT, HORNBEAM, and one or two kinds of WILLOW will succeed in the less smoky parts of a town; but they are not to be recommended for planting where the air is constantly impregnated with soot and dust.

THE MOUNTAIN ASH or ROWAN TREE (*Pyrus Aucuparia*) has proved itself to be a valuable small-growing tree for planting in urban districts. It is also a tree of great beauty, whether in flower or fruit, one that grows almost anywhere, and with a minimum

of attention. In many town streets, where the air is vitiated with fumes, the Mountain Ash grows with great freedom.

THE ALDER (*Alnus cordata*).—In this we have a good addition to the few trees that are really suitable for town planting, for it grows with great vigour and retains much of its fresh, spring-tide greenness in very smoky and impure localities. Of hardy constitution and unusually strong growth, it seems to defy the sooty emanations from hundreds of chimneys in two at least of our largest centres of industry.

THE MAIDENHAIR TREE (*Ginkgo biloba*).—A visit to the worst smoke-infested slums in London has now quite convinced me that the Maidenhair or Ginkgo Tree is one of the most valuable that can be planted in the impure atmosphere of a town garden. Few trees, I am fully aware, can compare with the one in question for withstanding the deleterious effects produced on vegetation generally by coming in too close contact with the impurities of our great

centres of industry. The ample delicate green foliage betrays — even late in the season, and when about to be cast off— little evidence of the fierce struggle that must almost constantly go on between vegetation and the smoke and filth of our towns and cities. That the thick leathery leaves and strong constitution of the tree play an important part in keeping it free from disease is clearly evident, while the fact of the leaves being renewed annually must go a long way towards casting off the sooty nodules which work such havoc on the tender foliage of most trees. At no less than five places in and around the great metropolis—and such places, too, where one is almost stifled with the fumes from chimneys—the Maidenhair Tree may be seen almost in as fresh and flourishing a condition as anywhere in the country; indeed about as large trunks as can be seen anywhere are growing in the smoke of Chelsea and the Commercial Road. Not only as a standard tree is the Maidenhair valuable, but it is also one of the prettiest wall plants

with which I am acquainted, and how many bare, ugly erections of brick and stone in our city streets want a bit of greenery I would not like to say.

THE CUCUMBER TREE (*Magnolia acuminata*).—Few planters are aware of how valuable the Cucumber Tree is for withstanding the grime and soot of large towns. Experiments have, however, resulted in this highly ornamental and fast growing tree being added to the list. Its ample foliage, yellowish white fragrant flowers, and general contour eminently fit it for a first place as a town tree. Soil of ordinary quality suits its general wants, although it prefers a strong yellowish moist loam.

THE TULIP TREE (*Liriodendron tulipifera*)—Excellent examples are not wanting of how valuable this tree is for towns and streets. It seems to have a wonderful recuperative nature; for, scorched, blackened, and encrusted as may appear the falling-off foliage, yet in the following spring it again puts forth a garb of the freshest

and richest greenery. The remarkable four-lobed, truncate leaves render this tree almost without an equal for ornamental planting, while its undoubted smoke-resisting qualities place it high in the rank of town trees. It is not particular as to soil.

THE WEEPING ELM (*Ulmus montana pendula*).—This is an excellent town tree, and in London at least would appear to be peculiarly suitable for planting where the atmosphere is heated and impure. Well developed specimens are by no means uncommon throughout almost every part of the metropolis, as in Bloomsbury Square, at Lincoln's Inn Fields, Lambeth, Russell Square and throughout the East end generally. The Weeping Elm is a tree of particularly neat and not too robust growth, and in consequence is particularly suitable for planting in confined spaces where larger growing trees would be quite out of place. For arbour work, in company with the Weeping Ash, it is one of our most valuable trees. Probably the largest and most picturesque specimen

in London is growing in the gardens of the Royal Botanical Society, in Regent's Park.

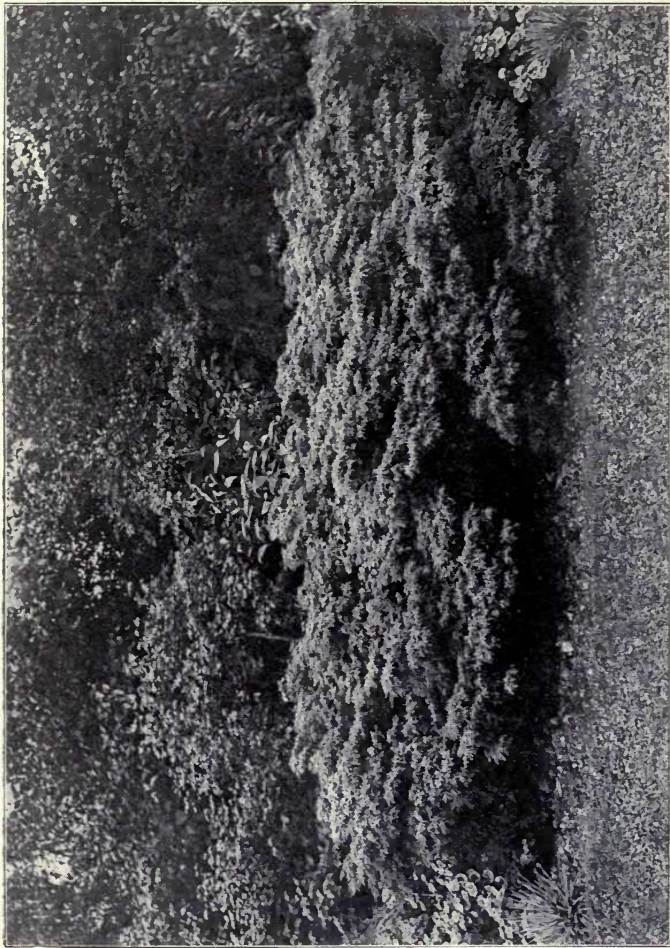
THE COMMON LABURNUM (*L. vulgare*) is largely planted in town gardens and squares, where it succeeds well, even when subjected to a large amount of soot and smoke. As ornamental trees of small growth, both this species and the SCOTCH LABURNUM (*L. Alpinum*) must rank high, for the large pendulous racemes of bright yellow flowers have few equals amongst those of any other species. The Scotch Laburnum closely resembles the common tree but it is of larger growth, sometimes 30 ft. in height, and blooms much later in the season. For the back lines of shrubberies or for garden subdivisions both are well adapted, and neither can be classed as at all particular in the matter of soil.

THE DECIDUOUS CYPRESS (*Taxodium distichum*).—This coniferous tree would appear to do well in many of our smoky towns, particularly where it is planted in dampish ground, as by the banks of a pond or lake.

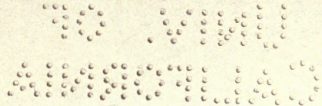
Being deciduous, it evidently has an advantage over evergreen species in the annual shedding of the leaves. It is a beautiful tree of fairly rapid growth, the light pea-green foliage, which dies off a bright reddish-brown in autumn, being much admired. For the worst districts of London it may not be adapted, but, when planted under favourable conditions as to soil and moisture, it is certainly well able to do battle with the impurities of a town atmosphere. The only other coniferous trees that succeed in smoky districts are the SAVIN (*Juniperus sabina*), AUSTRIAN PINE (*Pinus austriaca*) and the PLUM-FRUITED YEW (*Podocarpus andina*); but where the air is very impure the Austrian wears a miserable appearance and should not be planted.

THE EVERGREEN OAK (*Quercus Ilex*) cannot be recommended for planting in the most smoky of our larger towns, but the fact that it is able to stand a large amount of atmospheric impurities is well known and has been taken advantage of. In the suburban

THE SAVIN JUNIPER, FOR TOWN PLANTING



THE SAVIN JUNIPER, FOR TOWN PLANTING



portions of many of our towns it may be seen in a healthy and flourishing condition despite occasional fogs and the usual heated dusty air common to such situations. Being an evergreen renders it all the more valuable for town planting. It is somewhat difficult to transplant, but previous well directed management whilst in the nursery grounds will greatly obviate this drawback.

CONIFEROUS TREES

Generally speaking, coniferous trees are ill-adapted for cultivation in our larger towns and cities, and occasionally one sees the Cedar, Cypress, and Austrian Pine; but their rusty, semi-leafless, generally miserable appearance points only too clearly to the fact that they are unsuited for planting where smoke and other atmospheric impurities abound. Where the position is open and airy and the atmosphere not too contaminated with impurities, a few kinds succeed in a fairly satisfactory manner, but even these require a good deal of coaxing in the matter

of soil and situation. Evidently deciduous kinds succeed best, and the Maidenhair tree (*Ginkgo biloba*) and Deciduous Cypress (*Taxodium distichum*) may, even in London, be found of large size and in a healthy condition. Both are highly ornamental conifers that have been dealt with in the chapter under Town Trees. The common Yew, too, has received attention, but, unless when very favourably situated, it is not to be recommended.

LAWSON'S CYPRESS (*Cupressus Lawsoniana*) has received a good deal of attention at the hands of the town planter, owing probably to its being cheap and of a hardy constitution; but, as with most other conifers, only the more open positions and where the air is chemically pure should be chosen, and a light, rich soil is a necessity. There is, however, one member of the coniferous family that should receive attention when dealing with suburban town planting: that is the Tamarisk-leaved Juniper (*Juniperus sabina tamariscifolia*). Anyone who has seen this

shrub in Regent's Park—whether in the flower garden or by the lake side—will admit that it has at least some claims on the town planter. In four situations at least this Juniper has formed quite a wide-spreading mass of healthy foliage; and, as the atmosphere of Regent's Park cannot be favourably spoken of, the right of this procumbent conifer to be included in a list of town plants will be obvious. It certainly succeeds better than either Lawson's Cypress or the Austrian Pine. In the chemically impure atmosphere of Glasgow *Retinospora plumosa aurea* has thriven for many years; and it is a fact well known to a few botanists that the rare *Cephalotaxus Fortunei* has succeeded for many years in a smoky locality in the middle of London. Such cases are, however, rare and probably only point out that healthy, well rooted specimens of almost any plant, when given suitable soil, can succeed for a time even amongst the heated and foul surroundings of some parts of the great metropolis. *Prumnopitys elegans* or *Podocarpus andina*

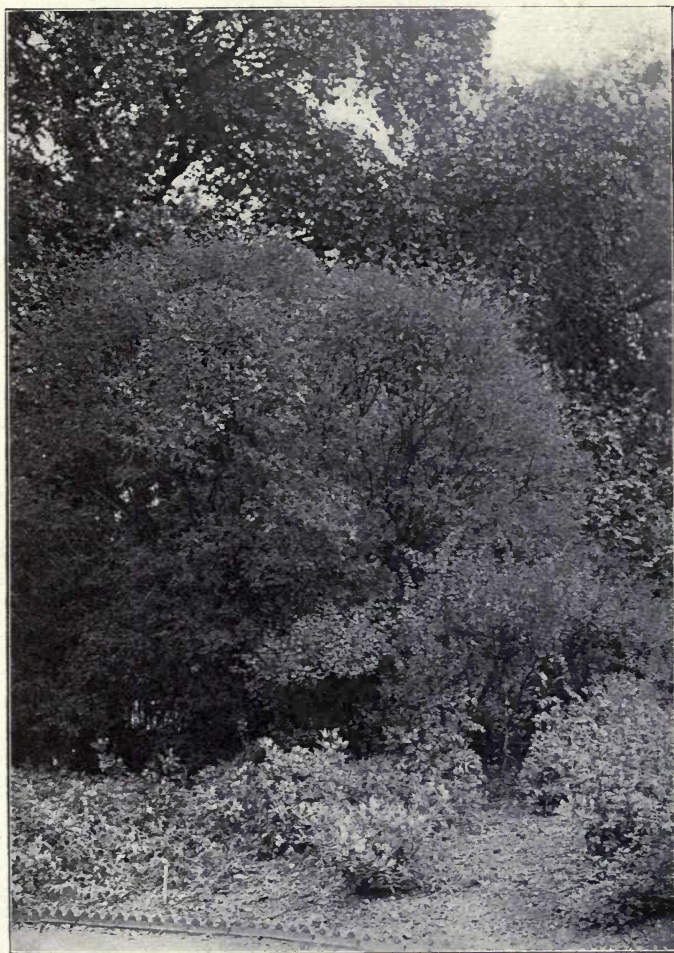
succeeds well as a town plant and may sometimes for this purpose be seen potted up and offered for sale in Covent Garden Market. In heated, dusty parts of London it certainly has succeeded in quite a satisfactory way for a number of years. As before stated, however, the planting of coniferous trees or shrubs is not to be generally recommended in smoky localities.

CHAPTER VIII

THE BEST SHRUBS TO PLANT

AS regards choice of town shrubs one must be guided greatly by the particular district in which planting is to be engaged, and it should be distinctly understood that all those recommended in the following notes will not succeed equally well in every part of London. Thus it would be unwise, in the worst smoke-infested areas, to plant several species that are well known to give satisfaction in the more open parts where the air is comparatively pure, and the further we recede from smoke and other atmospheric impurities, so the number of suitable species increases. With wall shrubs the Ivy, *Ampelopsis*, and Vine are by far the best and are planted in numbers, but in more favoured situations

many others, including the *Pyracantha*, *Akebia*, *Polygonum*, *Lonicera*, and one or two species of *Clematis*, thrive in quite a satisfactory way when afforded wall protection. Wherever shrubs are to be planted in smoke-infested situations, matters of the greatest importance are choosing healthy well rooted specimens and providing suitable soil, and, where both these conditions are attended to, the chances of success are greatly enhanced. Slipshod methods of inserting shrubs in unprepared ground that has not been deeply worked and rendered suitable in quality are to be discountenanced, and the little expense involved in carrying out such work on the most approved principle is money well spent. We certainly cannot change the nature of a tree or shrub that is unsuitable for withstanding the heated air of our more smoky centres of industry, but, by attending to its peculiar wants in the matter of soil and using only healthy well-rooted specimens to start with, the chances of success, if even for a while, are greatly increased. Among the most suitable



THE BLADDER SENNA (COLUTEA)

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shrubs for planting in smoky localities the following are to be recommended. Evidently deciduous species possess an advantage over evergreen kinds in the total annual renewal of their leaves; and hence it follows that, as with trees, deciduous shrubs should have the preference:—

THE HOLLY LEAVED OSMANTHUS (*Osmanthus ilicifolius*) is one of the handsomest of evergreen shrubs, and also one of the few that succeed in a satisfactory way when subjected to the impurities of a town atmosphere. In the smokiest districts of both London and Liverpool, it is unquestionably one of the best all-round shrubs. The holly-like leaves are thick and of firm substance, and the inconspicuous yellowish-green flowers are much like those of the Holly.

THE BLADDER SENNA (*Colutea arborescens*) is entitled to rank high amongst town shrubs, for it may be seen flowering and fruiting in the most smoky parts of many of our largest cities. It does well in the very centre of London, and is largely planted in Liverpool,

Manchester, Warrington, and Glasgow. The pretty yellow flowers and the curious bladder-like seed-pods are both showy and interesting, and render the plant one of the brightest shrubby ornaments during nearly half of the year. Few soils come amiss, but it succeeds best in a warm and sunny position, and is well adapted for use as a wall plant. This curious and ornamental shrub may be seen in unusually good form on the railway embankments of the London and South Western Railway nearly all the way from Clapham Junction to Wimbledon, but particularly near the latter place. Many passengers seem puzzled as to what is the name of the shrub with the inflated bladder-like pods, and which, from being tinged with red, add no little to the peculiar aspect and beauty of the plant. It is a shrub of the readiest culture, one that will succeed well in the poorest of soils, and is perfectly hardy in every part of these isles. For planting in smoky districts it is an especial favourite, the bright foliage and yellow pea-shaped flowers, which are succeeded by

the curious bladder-like fruit covering, being especial points of attraction. It is of South European origin, and has been known in this country at least from the days of Parkinson, where, in his "Paradisus," he speaks of it as the "greater bastard senna with bladders." Being readily raised from seed and of the simplest culture, it should make owners of waste ornamental ground where the soil is not of first-rate quality plant it in numbers, for certainly a more curious or interesting specimen is not to be found in the whole range of hardy shrubs.

FORSYTHIA VIRIDISSIMA is another deciduous shrub that can withstand the fumes and smoke of towns. It grows with the greatest freedom in very vitiated atmospheres, each spring breaking out as fresh and green as if it were growing in a sheltered country garden. Of vigorous constitution, it grows freely, and flowers most profusely in the largest cities. Stiffish soil suits it well, but it is far from particular in that way, and stands hard trimming in of its shoots with impunity.

FORSYTHIA SUSPensa is also suitable for planting in smoky localities, where it grows and flowers with perfect freedom. It is of more slender growth than the former, with variable leaves and long trailing shoots. The bell-shaped flowers are of a beautiful golden tint, and, being produced in early spring, are rendered all the more desirable. In several of the crowded parts of London, the Forsythias thrive in an almost remarkable manner and are to be specially recommended for planting in smoky towns.

LIGUSTRUM CORIACEUM is a fitting companion to the last, so far at least as its powers of withstanding the effects of an impure atmosphere are concerned. Being an evergreen, it is peculiarly well suited for planting in the town garden, where it grows with great freedom. It is easily managed, not particular as regards soil, is readily increased, and bears trimming in with perfect impunity.

THE OVAL-LEAVED PRIVET (*L. ovalifolium*).—This is one of the very best shrubs for densely populated districts, and is valuable

whether used in the shubbery or as a hedge plant. In London it may be ranked as a sub-evergreen, retaining its leaves in the most exposed situations till the new are produced in Spring, while in sheltered sites it is really an evergreen. Being cheap, readily transplanted, and succeeding well even in poor soils are additional recommendations.

THE JAPAN PRIVET (*L. japonicum*) is also suitable for planting where soot and smoke abound. It grows about 4 ft. high, with broad, smooth, glossy-green leaves and large compound racemes of white, slightly fragrant flowers. The Common and Golden-leaved Privets also do well as town plants.

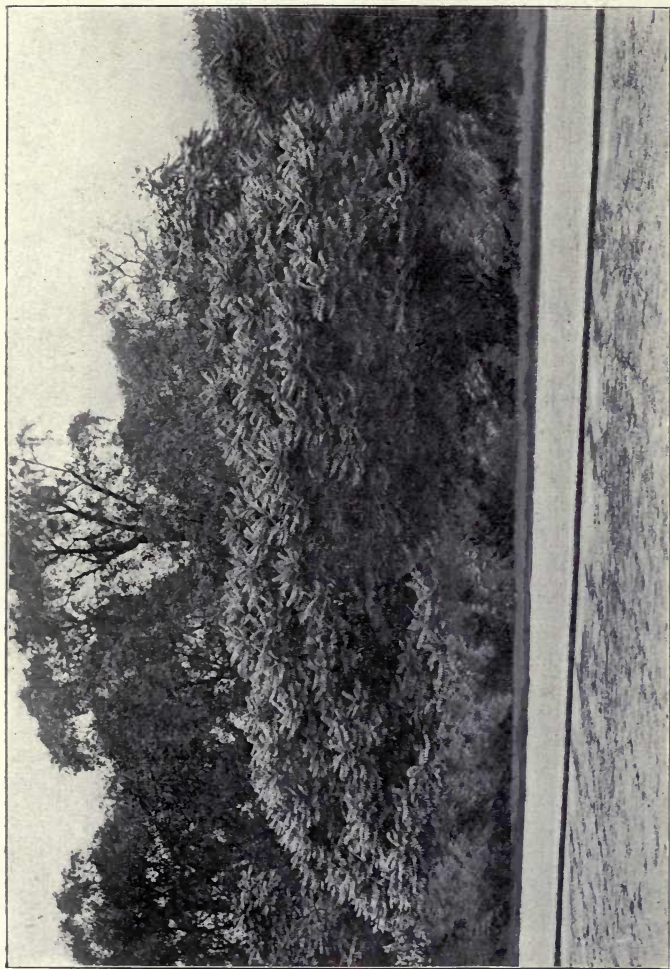
AUCUBA JAPONICA.—This well-known evergreen shrub is of great value for planting in urban districts, it being able to do battle with a more than ordinary amount of atmospheric impurities. For this reason it has been largely planted in town squares and gardens in the most crowded and densely populated parts. As an ornamental shrub, too, the Aucuba is well worthy of extensive cul-

ture, its fine, large, glossy and beautifully mottled leaves being at all times objects of admiration. It is easily raised from cuttings and grows with great freedom in any soil. In order to ensure fruit, both the male and female plants should be used.

THE VENETIAN SUMACH (*Rhus Cotinus*).—This is a much neglected shrub, but for general usefulness can hardly be surpassed. It is highly ornamental, whether in flower or fruit, the feathery inflorescence rendering it of quaint and curious appearance, particularly when a well-grown plant is under notice. It is peculiarly well suited for planting in cities, and may be seen in good condition in many of the most smoke-infested parts of the metropolis. A sound loam, neither too damp nor yet too dry, suits it to perfection.

THE STAG'S-HORN SUMACH (*Rhus typhina*) must on no account be omitted, as it is a plant of pretty and curious appearance, grows with freedom, and is as hardy as could be desired. The autumnal tint of the foliage of both species is highly ornamental.

THE SUMACH IN LONDON



THE SUMACH IN LONDON

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LILACS have few equals as town shrubs; indeed, it would be good practice to plant these first, whatever else might follow. They succeed admirably in the worst and most smoky parts of London and Glasgow, and there put on an appearance during early Summer that it would be difficult to exceed in country gardens. Recent experiments have proved that many of the finer forms are equal to the common kind for this purpose, particularly the Siberian and Persian.

THE COMMON ELDER (*Sambucus nigra*) has perhaps no equal as a town tree or shrub, succeeding admirably in even the most smoke-infested quarters. The various varieties are perhaps preferable to the species in so far as ornamental foliage is concerned, and include the golden, silver and cut-leaved forms.

THE SCARLET-BERRIED ELDER (*S. racemosa*) is also a good subject for the town garden and is almost a counterpart of our native species, but instead of black the berries are brilliant scarlet.

THE BROAD - LEAVED SPINDLE TREE

(*Euonymus latifolius*), with its bright, shining-green leaves and purplish-white, freely-produced flowers, is also at home in the town garden. It is a very desirable species, whether used as a single specimen or planted with others to form a shrub group.

EUONYMUS JAPONICUS is another excellent shrub, one that succeeds admirably wherever it is planted. It bears trimming well, and so can easily be kept to any required dimensions. For free growth and a hardy nature it has few equals. It is not particular as to soil, is an excellent dry-weather plant, easily propagated and almost smoke-defying. The silver and golden forms are most useful town shrubs, for they succeed well in very smoky and filthy localities. They are plants of great beauty, particularly the variegated, of easy culture, and not at all particular as to soil in which they grow. *E. radicans* is a straggling, decumbent shrub, and, as it stands soot and smoke well, is suitable for planting as a dwarf plant in the town garden or square. The double-flowered variety of

Prunus sinensis is hard to match either for beauty of bloom or as regards its fitness for planting in our smokiest thoroughfares. In many of the worst smoke-infested districts of London and Glasgow, both this species and *P. triloba* appear in quite as good form and health as if they were growing in the open country. They are excellent hot-weather plants, for after hot and dry summers they do not seem so hard pressed as are many of what would be considered more robust subjects. Fairly good soil, and not too draughty a position, are all they need, while their after-management is of the simplest.

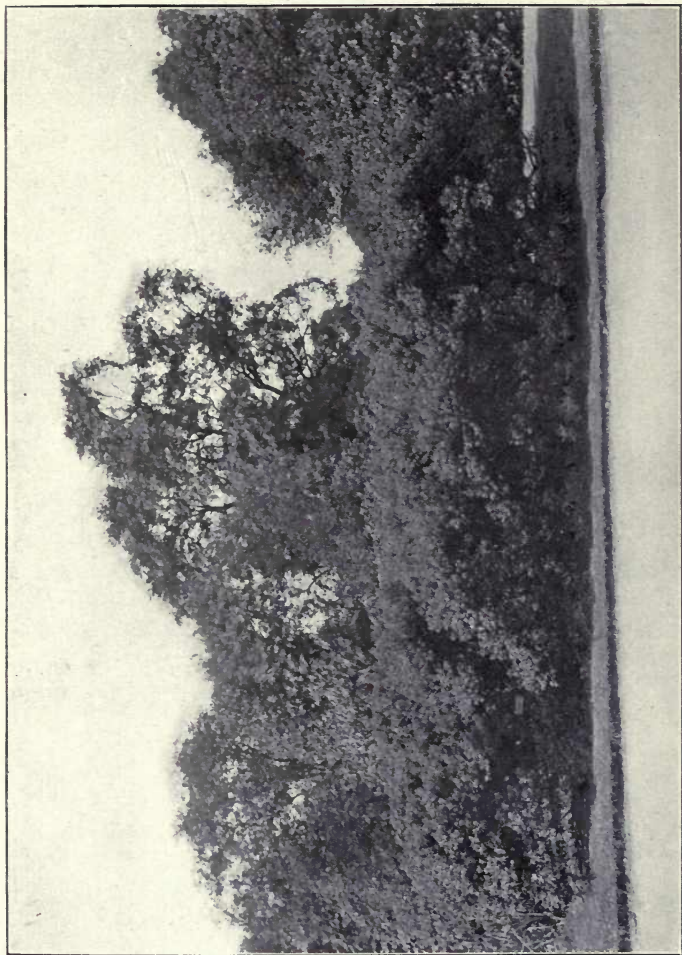
THE DOGWOOD (*Cornus sanguinea*) is a good town shrub and valuable for its bark colouring, which is of the brightest red and most effective during the winter season. The flowers are creamy-white and succeeded by pretty black berries. It will succeed in almost any dampish soil.

STEPHANANDRA FLEXUOSA is a deciduous shrub of Japanese origin and a valuable species for town planting. It is of somewhat

procumbent growth, with neatly-toothed leaves and produces an abundance of individually small white flowers. Peaty loam suits it well. Not only in London does this shrub do well, but in several others of our most smoky towns it is considered one of the most valuable for planting.

BUDDLEIA VARIABILIS and its still more floriferous variety VEITCHIANA have few equals for planting in the most unhealthy of our towns and cities. Being of strong growth and with an iron constitution, both are peculiarly suitable for smoke-infested areas, while they are remarkable for the production of immense panicles of rosy, lavender flowers. They reproduce themselves freely from seed, and quantities of young plants have been picked up around the parent specimens when planted in our London gardens.

OLEARIA MACRODONTA has given every satisfaction when planted in the impurest of town atmospheres. It is a beautiful shrub,



OLEARIA HAASTII

of neat and compact habit, and produces dense heads of white flowers in abundance.

O. HAASTII is also desirable for smoky towns, the leathery leaves of both species causing them to withstand heat and foul air in a remarkable manner.

GRISELINIA LITTORALIS. — Although a little-known evergreen, this is well suited for town planting, experiments having proved it a most valuable addition to the limited number of shrubs suitable for such a purpose. The appearance of the plant with its deep-green, glossy leaves, is highly attractive. It grows freely in ordinary soil, and is readily propagated; it is to be hoped it will receive the notice it is fairly entitled to as a valuable hardy shrub.

HIBISCUS SYRIACUS is one of our most valuable late autumn-flowering shrubs, and is also one of the few that can successfully battle with an impure atmosphere. In many parts of London, where the air is vitiated by emanations from factory chimneys, this pretty shrub is seen in perfect health, with

plenty of foliage of the richest description and quite a wealth of showy flowers. It grows freely in ordinary soil. It may be trimmed in at pleasure and withstands frost perfectly. It is a shrub which town residents should plant freely if they have a bit of ground that they want to look pretty.

THE WAYFARING TREE (*Viburnum Lantana*).—This valuable shrub does not receive that amount of attention to which its merits entitle it. It succeeds well in some of the most filthy and smoky districts of our largest cities. It blooms with great freedom, and the flowers are succeeded by the brightest and showiest of berries. The Wayfaring Tree is readily propagated, and few soils come amiss to it.

LEYCESTERIA FORMOSA is a beautiful hardy shrub, with hollow stems, large ovate leaves, and white or purplish flowers in pendulous racemes. More conspicuous than the flowers are the deep purple foliaceous bracts, which impart to the shrub a distinct and very ornamental appearance. It is a capital town

plant, shooting out fresh and green after being subjected to a winter's incessant fumes from the chimneys of the great metropolis. It is perfectly hardy, of free growth, readily propagated, and altogether a valuable shrub.

THE FLOWERING CURRANT (*Ribes sanguineum*).—Too much praise can hardly be bestowed on this handsome free-flowering shrub for the planting of town gardens and shrubberies. There it succeeds to perfection, and flowers with the greatest freedom. In early spring it breaks out fresh and strong, regardless of the noxious fumes and impure atmosphere. Well planted at first, it rarely fails, striking out its roots far and wide, and soon becoming a dense shrub of medium proportions. Nothing can well surpass it for the quantity, colour, and quality of its showy flowers, while it is the easiest of shrubs to propagate and cultivate.

PHILLYREA VILMORINIANA. — This has been planted largely for experimental purposes in the very heart of London, and succeeds there in such a way as to entitle it to

rank first amongst shrubs for town planting. It is of neat habit, is an easy subject to deal with, and requires but little attention.

THE KENTUCKY COFFEE TREE (*Gymnocladus canadensis*) can ill be spared from any list of suitable subjects for the town garden, it having been proved to be an excellent plant for the purpose. The racemes of white flowers which it bears in abundance are particularly showy and interesting.

THE STRAWBERRY TREE (*Arbutus Unedo*) finds a congenial home in the great metropolis, and there may be seen flourishing where daily it is subjected to poisonous emanations from chimneys. The thick leathery leaves seem well able to resist the worst of town air impurities, for they look as fresh and green after every shower of rain as could well be desired. As an ornamental shrub the *Arbutus* ranks high, the creamy flowers and strawberry-like fruit being peculiarly rich and attractive. Any soil of good quality, but not surcharged with moisture, grows it well.

THE DOUBLE FURZE (*Ulex Europaeus*)

flore pleno) is one of our handsomest flowering shrubs, and is of value for planting in town gardens and squares. For clothing warm and dry banks, where few other plants would succeed, Furze does remarkably well, the foliage being thick and healthy, while the flowers are abundantly produced. It is of neat habit, and by judicious pruning may be kept to any desirable size.

KOELREUTERIA PANICULATA is a very handsome shrub or small-growing tree, particularly when in flower, and it is one of the best of town plants. In many of our most smoke-infested towns—Warrington and the outskirt districts of Liverpool and Manchester—it grows with great freedom and produces in abundance, during June and July, its panicles of showy yellow flowers. Although the *Koelreuteria* hails from China, it may be relied upon as perfectly hardy in perhaps every part of the British Isles.

THE SPURGE LAUREL (*Daphne Laureola*) grows freely in many a town garden; indeed, it is no uncommon thing to see large and well-

balanced specimens where smoke and filth are the order of the day. It is a pretty evergreen shrub, of free and vigorous growth, and one that is able to take care of itself under almost any conditions. It does well in the shade and under the drip of other trees, though it is all the better for a sunny site, but not too exposed a situation. The Spurge Laurel is readily propagated, and young plants are usually found in quantity where old, established specimens abound.

COTONEASTERS of various kinds succeed well as town plants. All, or nearly all, are valuable for covering bare and unsightly objects, and, as they grow well in the roughest and poorest of soils, they may be used in positions where other less accommodating subjects will hardly succeed. As ornamental plants, many of the Cotoneasters are highly valuable, from their neat, glossy leaves and abundance of brightly coloured fruit. Particular mention may be made of *C. frigida*, with its large clusters of scarlet berries; *C. Simonsii*, with silky foliage and ver-

million fruit; and our native *C. vulgaris*, a neat and hardy as well as free-fruited species.

THE ALMOND (*Amygdalus communis amara*) and *A. nana* have proved themselves to be useful plants for doing battle with the smoke and impure air of towns. They are both highly ornamental when in flower, not fastidious as to soil, and of neat habit. In and around London Almonds are largely planted, as they are so ornamental, so free in flowering, and so easily managed. Of the typical *A. communis* there are numerous distinct varieties, including some with much larger and brighter flowers, one of the best of which is *A. communis major*.

THE LAURUSTINUS (*Viburnum Tinus*) finds a congenial home in many a London garden, where it has proved itself to be a decided acquisition. It is a plant of bright appearance, and as free-flowering a subject as there is in the whole range of hardy shrubs. Cuttings inserted in sandy soil during August root freely, and soon form sturdy plants that

in a couple of years are fit for transferring to their permanent quarters.

WEIGELIA ROSEA and *W. amabilis* are both highly ornamental shrubs, of the freest growth, and well suited for planting in smoky localities. In many of the London gardens these shrubs may be seen in a satisfactory state, showing but few of the bad effects that generally attend town shrubs. Both are of simple culture, easily propagated, and not fastidious as to soil.

DEUTZIA SCABRA is another neat-growing and highly desirable plant for the town garden. It flowers in such situations with unusual freedom, ripening its young wood well, and showing but little traces of its struggle with the impure atmosphere. It may be trimmed in at will, is readily propagated from cuttings, and succeeds well in a great variety of soils and situations.

THE COMMON BOX (*Buxus sempervirens*) and the TREE BOX (*B. sempervirens arborescens*) are largely used in town parks, squares, and gardens. The thick, leathery

foliage is well suited for withstanding impurities in the air. The Tree Box thrives better than the normal plant in the heart of our largest centres of industry.

THE GUM CISTUS (*C. ladaniferus*) and the LAUREL-LEAVED form (*C. laurifolius*) are two highly ornamental and perfectly hardy shrubs. The former has large white flowers, with a distinct purple blotch at the base of the petals, while the robust-growing *C. laurifolius* has pure white flowers. Both are excellent town plants, succeeding well even in very populous localities.

THE JAPAN QUINCE (*Cydonia japonica*) is one of the most beautiful shrubs with which our gardens have ever been enriched; and, from the number of fine healthy specimens that are to be found in many of our largest towns, it would thus appear to be particularly suitable for planting where soot and smoke are prevalent. The brilliant scarlet flowers, which are produced at a season when such are most in want, impart to well-grown

specimens a beauty which is almost impossible to describe.

HYPERICUM NEPALENSIS is probably the best of the St. John's Worts for withstanding smoke, dust, and heat. It is a plant of great beauty, the bright foliage and abundance of large golden flowers placing it in the first rank as an ornamental shrub. *H. calycinum* is also valuable for similar purposes; while, for edging to the shrubbery, or for covering bare spots, it has few equals.

HYPERICUM PROLIFICUM is a first-class shrub for the town garden and succeeds well even in the most smoky parts of London, as at the Tate Gallery, nearly opposite the Lambeth potteries, and in the East End by Poplar and Bow. It attains to a height of 4 ft., with twiggy stems and abundantly produced bright yellow flowers.

THE TUTSAN, or SWEET AMBER (*H. Androsæmum*), is also suitable for planting in confined spaces and where the air is vitiated and impure. It rarely exceeds 2 ft. in height,

with ovate leaves and terminal clustered cymes of yellow flowers.

CASTANOPSIS CHRYSOPHYLLA must on no account be omitted from any list of shrubs that are suitable for planting in the more smoky parts of our larger centres of industry, as both in London and Edinburgh it has been proved to be a valuable addition to such plants.

MAHONIA AQUIFOLIA, M. BEALII, and M. JAPONICA all do fairly well in the town garden, but are the better of being assigned to select positions in the open. Good vegetable mould seems to suit the various species of Mahonia, and, when once fairly established, they grow and flower freely. All are shrubs of great beauty: the bright and showy flowers, produced in rich profusion, are followed by abundance of clusters of rich bluish-purple berries.

SKIMMIA JAPONICA is a low-growing shrub that I have seen doing well in the heart of London, where smoke and other impurities of the air do not seem to affect it in the least.

For beauty of flowers it is not remarkable, but as a handsome berry-bearing shrub it can well hold its own with any other. A north aspect and half-peaty soil would seem to suit it.

THE SNOWY MESPILUS (*Amelanchier Botryapium*), with its racemes of white flowers and desirable outline, is a valuable shrub for planting in towns. The flowers are produced in early spring, when lawns and gardens look dull and cheerless. Of free growth, it succeeds in any fairly good soil and soon forms a handsome specimen.

THE MOCK ORANGE OR SYRINGA (*Philadelphus coronarius*) can ill be spared from any collection of town shrubs, it being one of the best for withstanding prolonged heat and smoke. It is wonderfully recuperative, and even when planted where smoke and other impurities of the air are acknowledged to be particularly abundant, the Mock Orange comes through the ordeal in a truly surprising manner. It grows about 8 ft. high, with ovate and serrulated leaves and pretty racemes of yellowish-white flowers in May.

P. GORDONIANUS and P. GRANDIFLORUS should also find places in town gardening.

THE BEARBERRY (*Arctostaphylos Uva-ursi*).—Judging from a specimen which has been growing for many years in the gardens of the Royal Botanic Society of London, in Regent's Park, where the atmosphere is by no means free from soot and smoke, and where fogs are particularly bad, this native of high-lying districts would appear to be suitable for planting in towns. There it has become quite established and formed a spreading mass about 2 ft. through, the obovate, dark green leaves being as fresh and healthy as one finds them on Scottish hillsides. Being of low procumbent growth, it is, however, best suited for the rock garden or for planting in the front row of a shrubbery.

RHODODENDRON PONTICUM is largely used for planting in the more smoky parts of such manufacturing towns as Manchester, Liverpool, and Warrington. In London it does

fairly well when subjected to smoke and soot, but it is apt to become rusty and require replenishing. For suburban districts it is better suited.

KERRIA JAPONICA has good claims to be considered as a town shrub, and is one of those accommodating members of the Rose family that can succeed almost anywhere. As a wall plant for the town garden, it is in common use, and, being highly ornamental both in leaf and flower and well suited for training, has special recommendations for extended use. The orange yellow flowers are produced in great rosettes, and, while the shrub is perhaps best suited for wall purposes, yet it makes a handsome standard or shrubbery specimen. In many parts of London both the species and variegated leaved form do remarkably well.

THE SNOWDROP TREE (*Halesia tetraptera*).—It is well to know that so beautiful and hardy a shrub as the Snowdrop Tree is suitable for town culture. It succeeds in various parts of London, one in the East

End which we measured being 8 ft. high and nearly as much in spread of branches. The flowers, which resemble the Snowdrop, are ivory white, drooping, and produced in lateral fascicles of eight or ten together. Soil of a peaty nature would appear to suit it best.

THE SOUTHERNWOOD (*Artemisia abrotanum*) can also be recommended for planting where smoke and other impurities are present in the atmosphere. It is a small growing shrub, with highly aromatic, deep green, Rue-like foliage, and a plentiful supply of dirty yellow flowers. Although interesting as a town shrub, it can lay claim to no value as an ornamental species.

THE COMMON FIG (*Ficus Carica*).—In almost every part of London, as well as in Glasgow, Liverpool, and Manchester, the Common Fig succeeds well as a town plant. Even during hot, dry seasons it never flags, and the ample, deeply lobed leaves have a bright and cheery appearance. It succeeds best where the roots have unrestricted room for development and where they are within

the reach of water—indeed, some of the largest and healthiest specimens we know of have sent their roots down into old disused sewer pits. As a wall plant it is best adapted. There are noble examples of the Fig at Lambeth Palace, in Bloomsbury Square, and at St. Giles-in-the-Fields.

THE BUCKEYE (*Æsculus parviflora*).—As an ornamental shrub or small-growing tree, the Buckeye has few equals, and, being able to do battle in quite a satisfactory way with the impurities connected with a town atmosphere, its value for general planting is greatly increased. It forms a perfect hemisphere of foliage, the leaves resembling those of the Horse Chestnut, and when crowned with the pure white flowers and red-tipped anthers, has indeed few equals in a decorative way. It requires to be planted in rich, dampish loam and to have plenty of room for branch development.

THE JUDAS TREE (*Cercis siliquastrum*).—This shrub, or small-growing tree, has distinct claims on the town planter, for it suc-

ceeds in a fairly satisfactory manner at many points of the great metropolis. It is of somewhat ungainly growth, but the handsome deep green, reniform leaves, and rosy-purple flowers make up for this defect. The fact of the flowers being produced along the branches and before the leaves are developed is a distinct advantage. Rather damp loam and a shadyish situation will suit well the wants of the Judas Tree.

THE BAY TREE (*Laurus nobilis*).—Many persons are under the impression that the Sweet Bay Tree is peculiarly suited for smoky localities, the idea being fostered by the large pot and tub specimens that are to be seen at many of the hotels and other public buildings throughout the metropolis. Although the Bay has few equals as a standard pot or tub specimen, the foliage being neat and sweetly scented and the general appearance highly decorative, yet that it has distinct advantages in the way of doing battle with an impure atmosphere is not borne out by facts. It may and does succeed for a time, and, being a

general favourite, is replaced when showing signs of distress, thus giving the casual observer the impression that it has special advantages for using in close, confined and smoky parts of our towns and cities. Where expense of renewal is a matter of little moment, and a decidedly ornamental specimen shrub is required, by all means plant the Sweet Bay. Its cultural requirements are simple, but the soil in which it is growing as a pot or tub plant must be kept uniformly damp. It is, comparatively speaking, an expensive shrub.

THE BUTCHER'S BROOM (*Ruscus aculeatus*).—Although having but small claims to an ornamental shrub, yet the fact that two species at least of *Ruscus* have been found suitable for town planting will be sufficient excuse for including them in this book. It is a native evergreen shrub, with rigid cladodes, which take the place of leaves, and small greenish-white flowers which are succeeded by bright red berries about the size of marbles. It is a capital town plant and

may be seen in several very smoky quarters of North and East London. That it flourishes well in the shade is another valuable trait.

R. Hypophyllum is also suited for positions similar to the former, from which it is recognized by its longer and brighter leaf-like branches. The flowers and fruit of this species are produced on the under sides of the cladodes, while those of *R. Hypoglossum* are produced on the upper side.

Amongst BAMBOOS, few are suited for planting in smoky localities, though in the more open gardens and in the suburbs a few species have been established for several years. One of the best is *Arundinaria Veitchii* with stout stems about 2 ft. high and narrow oblong leaves that are of a pleasant green colour above and decidedly glaucous beneath. For the shade it is also probably the best of the family. *Bambusa palmata* has also done well where the air is not too vitiated by impurities, and is of stout growth, with leaves which often are 1 ft. long by 3 in. wide.

The commonly cultivated *Arundinaria*

japonica is well suited for the town garden, although its appearance during Winter, when subjected to excessive smoke and soot, is shabby in the extreme, owing to the leaves falling off. In Spring, however, it soon revives. Other species that have done fairly well in some of our town parks are *Arundinaria Simoni*, *A. fortunei variegata*, *Phyllostachys nigra*, the most striking of all, with dark stems, and plumes of bright green foliage, and *Bambusa pygmaea*, the hardiest and most accommodating of any. Good rich loam, with plenty of thoroughly decayed manure and deeply trenched ground, are necessities for the successful cultivation of all the Bamboos.

In the gardens of the Royal Botanical Society of London, Regent's Park, which are by no means free from fog or smoke, the following out of a large number of shrubs that have been tried, succeed best:—*Skimmia oblata* and *S. japonica*, *Ruscus aculeatus*, *Cornus Mas*, *Rubus deliciosus*, *Gum cistus*, *Hypericum perforatum*, *Euonymus*, *Box*, *Mahonia*

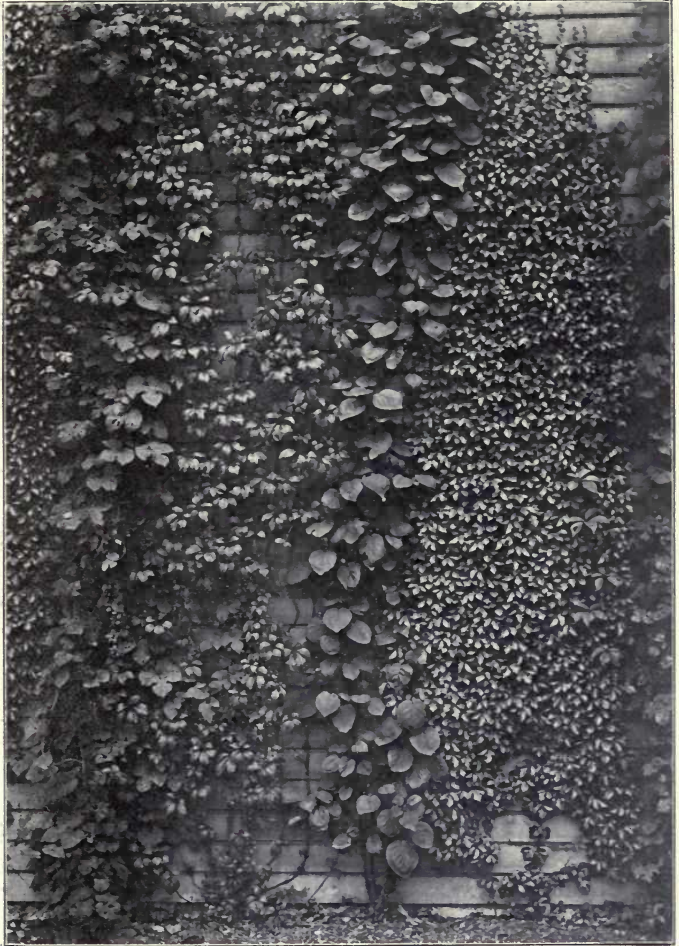
aquifolia, Berberis stenophylla, Cytisus scoparius, Ledum palustre, and three species of Spirea (S. Lindleyana, S. Douglasii, and S. fruticosa). But the most remarkable instance is that of the Bearberry (*Arctostyphalos Uva ursi*), which positively seems to revel in the smoke-laden atmosphere of these gardens, and has increased from a tiny plant to a bold spreading clump some 4 ft. across, with foliage of the healthiest description. It is certainly strange why a shrub that is native of high mountain districts where the air is of the purest description can even subsist, let alone positively thrive, near sea-level and in the foulest of town atmospheres.

CHAPTER IX

CLIMBING AND WALL PLANTS

AMONGST climbing plants that are useful for covering walls and fences and at the same time capable of withstanding a town atmosphere, a few only are suitable. Where wall plants are to be used, special preparation of the soil should take place, that usually found at the base of buildings being poor in the extreme and ill suited for giving nourishment to a plant that above ground has to contend with the drawbacks of an impure town atmosphere. For such climbing and wall shrubs as have been found suitable a light, rich earth is necessary and the quantity used should be considerable.

Where these shrubs are to be planted, a good patch of ground—say, at least 3 ft. square—should be dug out, the sides and bottom well



WALL PLANTS FOR A TOWN GARDEN

Ivy, Hop, Clematis, and Actinidia

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loosened up, and fresh soil substituted for that which has been removed. Into this compost the creeper should be planted, and the shoots, even in the case of the Ivy or *Ampelopsis*, nailed to the wall, treatment which will go a long way in the new growths taking a speedy hold of the building they are intended to cover. Amongst wall plants *Ampelopsis Veitchii* is one of the best, for in many of the most heated and foul of London districts it grows with the greatest freedom and soon covers the wall or house-side on which it is planted. The delicate green and beautifully cut foliage, which changes to a bright crimson in Autumn, renders this shrub one of the most desirable of wall plants. It is not at all particular as to soil, but sandy vegetable refuse and a good root-run are distinct advantages in its cultivation.

THE COMMON IVY (*Hedera Helix*) is another excellent wall plant for the London garden, and it is equally useful for covering bare ground where grass refuses to grow. There are several forms of the Ivy, but those most suitable for planting in smoky towns are

Raegneriana, *Cænwoodiana*, Emerald Gem, and the Irish variety (*Canariensis*) with big handsome leaves. Though by no means particular as to the quality of soil in which it is planted, often thriving well amongst builders' refuse of stones and lime, yet it will well repay the breaking up and enriching of the soil where it is to grow.

THE VINE (*Vitis vinifera*) can quite hold its own with either of the former as a town shrub, and in several of the most smoke-infested parts of London it thrives well as a wall plant. The variety *purpurea* is also a desirable subject for the walls of a house, and would appear to be specially suitable for planting in smoky districts. It requires to be nailed to the wall and is improved by periodical prunings. Good rough loam and thoroughly decomposed manure will be found suitable for either.

THE PYRACANTHA (*Cratægus Pyracantha*) and the much to be preferred variety *Lelandi* are well suited for doing battle with the impurities of a town atmosphere, as may be

seen in several of the gardens of the East End of London. They like good rich fibrous loam in which to grow, and special care in breaking up the surrounding ground is amply repaid afterwards by increased vigour of growth. The plentifully produced and brightly tinted fruit renders this one of our most ornamental berried shrubs. It requires to be nailed to the wall and bears pruning well.

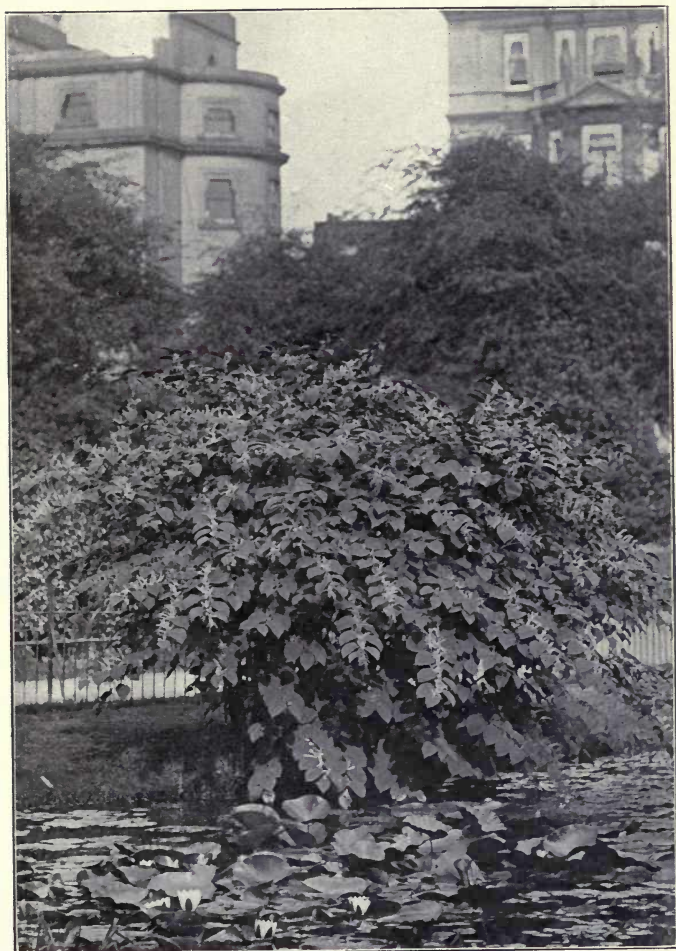
THE EVERGREEN HONEYSUCKLE (*Lonicera sempervirens*) is also suitable for planting in towns, but it will not succeed satisfactorily in the most smoky localities. For suburban districts it is peculiarly suited, and well established specimens may be seen in many parts of the great metropolis. A friable loam will suit its wants with respect to soil, and nailing to the wall is a necessity. For planting against fences, the Evergreen Honeysuckle is a decided acquisition.

PRIVETS, particularly the Japanese, are often used for wall covering in towns, where they succeed admirably and soon cover a good width of surface. They flower well in such a position.

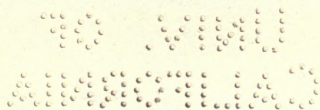
THE JASMINES (*Jasminum nudiflorum* and *J. officinale*) are peculiarly suitable for planting in towns, either for wall covering or to tree stumps, roots, and rockeries. They are of great hardihood, vigour of growth, and beauty of flower, the production of the latter being greatly influenced by the protection of a wall. The first-mentioned has ternate leaves and usually solitary yellow flowers, while *J. officinale* has pinnate foliage and sweetly scented pure white flowers. When planting either, a good patch of ground should be well worked up and light rich loam substituted for that of inferior quality. They both require nailing to the wall.

FORSYTHIA VIRIDISSIMA and F. SUSPensa are excellent wall plants for the town garden. They are slender growing shrubs, with long trailing shoots and plentifully produced yellow or golden flowers. They may be made by careful management to cover a wide area of wall, and producing their flowers in early spring and before the leaves is a point in their favour for the purpose required. Loamy soil

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POLYGONUM—A GOOD TOWN SHRUB *To face page 124*



suits either, and they must be nailed to the wall.

CLEMATIS MONTANA has survived in London as a wall plant for many years and is charming on account of the plentifully produced white flowers. For clambering over brickwork, rockwork, or tree stumps it is also valuable.

POLYGONUM BALDSCHUANICUM, although more fitted for decorating a dead tree stem, has nevertheless been found valuable for planting against a town wall or building. It is a very desirable, fast-growing, and freely flowering shrub and should receive further attention.

GARRYA ELLIPTICA has proved itself a good wall shrub in several of our larger towns, and is desirable on account of the leaves, which greatly resemble those of the Evergreen Oak, and long tessellated catkins which render this shrub one of interest and beauty. It requires to be planted in rich loamy soil, and the shoots should be nailed to the wall or building.

THE ROCK ABELIA (*A. rupestris*) has been tried with satisfactory results for covering

portions of a bare wall in the metropolis. It is a neat little shrub with slender shoots, shining green serrated leaves, and tubular sweet-scented flowers. Rich, well-drained soil is a necessity.

THE JAPANESE QUINCE (*Pyrus*, or *Cydonia japonica*) is one of the most showy of wall plants, and can succeed well where smoke and dust abound. The flowers are brilliant crimson and produced in plenty towards the end of Winter and before the leaves appear. Wherever wall shrubs are being used in towns, this beautiful shrub should receive attention. It is of fairly rapid growth and would appear to do well in any situation.

EUONYMUS JAPONICUS and the variety *Aureo marginatus* do well as wall shrubs in London—indeed, they succeed well where atmospheric impurities are known to exist. They make excellent wall plants and would seem to retain their foliage in better condition when used for this purpose than when planted as standards. These may be considered as the best of wall shrubs for town planting, but others have been tried with a fair amount of success—such as

Buddleia variabilis, *Ceanothus azureus*, *Coton-easter Simonsii*, *Indigofera Gerardiana*, *Aristolochia Sipho*, *Viburnum plicatum*, but they are not to be recommended for very smoky localities.

THE HOP (*Humulus lupulus*) has few equals for covering a trellis or wall in smoky towns. Being an herbaceous plant of stout growth, it is well able to withstand both soot and smoke. The ample foliage and conspicuous fruit are additional recommendations.

THE LARGE TRUMPET FLOWER (*Tecoma radicans major*).—This old occupant of our gardens is perhaps the loveliest wall plant in cultivation, and having been found suitable for planting in towns is an extra qualification. The stems are long, twisted and wiry, while the graceful pinnate leaves and handsome trumpet-shaped, scarlet-red flowers all combine to make this wall shrub a general favourite with planters. It is quite hardy, of free growth, and flourishes best in a light, well-drained loamy soil. This well-marked variety, which differs from the species in its more

robust growth, larger leaves, and paler flowers, is to be recommended for town gardening.

WISTARIA SINENSIS has some claims to be considered as a town shrub, for numerous goodly specimens may be seen wherever the air is not too confined and impure. It is an excellent wall or arbour plant, the long drooping racemes of purplish-lilac flowers being produced in rich profusion. Not by any means difficult to cultivate, but, being a plant of wide spread, it should be allowed plenty of room for development.

THE BRAMBLES (*Rubus*) are likewise suitable for town planting, and two species at least have survived the ordeal of smoke, heat and dust for the past ten years in a city garden; *R. laciniatus* (the cut-leaved Bramble) would seem to be best suited for smoky localities.

CHAPTER X

HERBACEOUS PLANTS FOR THE TOWN GARDEN

ALTHOUGH a fairly large number of herbaceous plants seem to succeed in smoky localities, yet the list of such as really thrive satisfactorily for a number of years without renewal is by no means a long one. There are a few, however, that under very unfavourable conditions as to soot and smoke, but particularly when carefully planted in suitable soil, do really succeed and give little or no trouble for a number of years. Others, again, owing to strong clumps having been planted, look well and flower freely enough for a time, but gradually the constitution becomes impaired and they die out prematurely. Some of the best would include *ACANTHUS SPINOSUS*, with its spiny

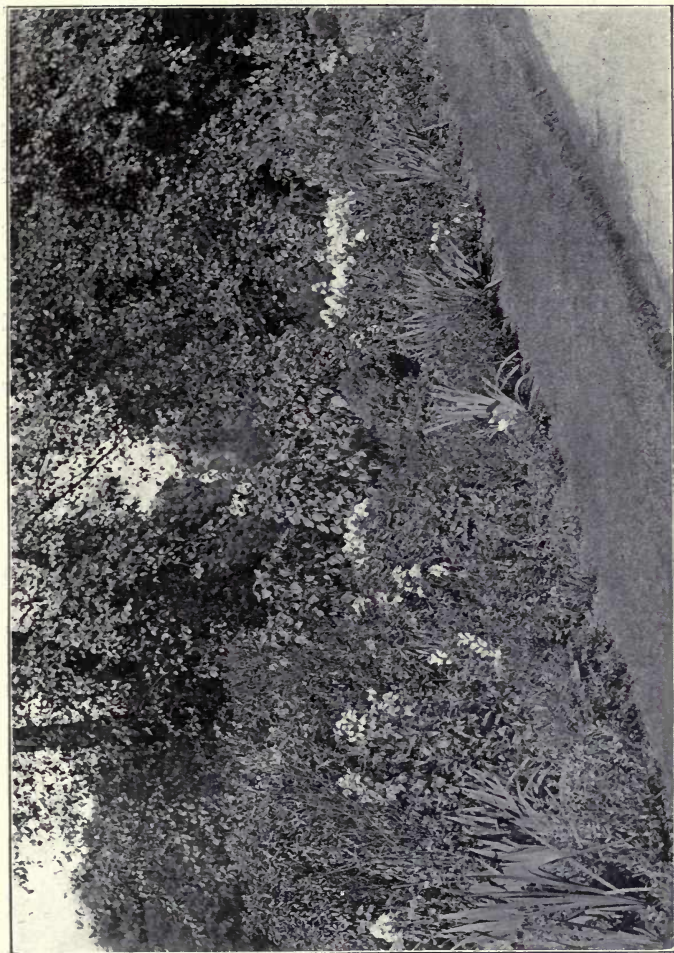
leaves and freely produced purple and white flowers.

ACHILLEA PTARMICA FL. PL. also does well and produces an abundance of its pure white double flowers.

ANCHUSA ITALICA, with its sky-blue flowers and noble port, is a worthy plant for the town garden, while the Dropmore form is even more suitable for the same situation and a superb variety in every way. Many species of ASTER are well suited for planting where impurities of the atmosphere abound, some of the best being *A. Amellus* and *A. multiflorus*.

BOCCONIA CORDATA, with its beautifully cut leaves and panicles of brownish flowers, is a desirable species for town planting, which may also be said of several of the larger-growing Campanulas. The Burning Bush (*Dictamnus Fraxinella*) has few equals either as a flowering plant or for succeeding where the air is vitiated and impure, and should find a position wherever herbaceous plants are cultivated.

DORONICUM HARPUR CREWE, with its beautiful yellow flowers, would also appear to



HERBACEOUS PLANTS IN A TOWN GARDEN

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be well suited for planting where smoke abounds, which may also be said of the LYME GRASS (*Elymus glaucifolius*) with its glaucous blue foliage and feathery habit of growth.

EUPHORBIA CYPARISSIAS has few equals as a town plant and has been for many years established in a London garden. It flowers freely and is a plant of striking appearance. One or two species of FUNKIA do well in smoky localities, the best being *F. Sieboldii* and the variegated-leaved varieties. Several species of SUNFLOWER (*Helianthus*) can be recommended for planting where the atmosphere is not too impure, notably *H. laetiflorus*, *H. multiflorus*, *H. giganteus*, and *H. rigidus*. *Hemerocallis flava* and *H. fulva* are both excellent town plants and are showy both in leaf and flower. They want fairly rich soil and can succeed in partial shade. The COW PARSNIP (*Heracleum giganteum*), with its noble stem, finely cut leaves, and dense heads of creamy white flowers, has few equals for planting in smoky localities. Most species of IRIS are excellent town plants and succeed in very poor

soil and with a minimum of attention. A few of the best would include *I. Pseudo acorus*, with golden yellow flowers; *I. pumila cærulea*, having rich, clear blue flowers; *I. sibirica*, *I. reticulata*, violet and yellow; and *I. stylosa*, which is delightfully fragrant. But other species and varieties also do well and should be planted, particularly some of the English and German kinds. *Lythrum salicaria roseum* is a beautiful town plant that succeeds best in rather dampish positions or by the water side, while another excellent variety, with deep rose flowers and growing to nearly 5 ft. in height, is named *superbum*. The OSWEGO TEA (*Monarda didyma*), with its pleasantly perfumed leaves and bright scarlet flowers, also succeeds well in smoky localities, and so do the well-marked varieties *rosea* and Cambridge Scarlet. Of the EVENING PRIMROSES (*Oenothera*), several may be relied on as suitable for the town garden, two of the most desirable being *Youngii* and *Lamarckiana*. *Plumbago Larpentæ*, with terminal heads of rich blue flowers and beautifully autumn-tinted

leaves, is another choice subject for planting when smoke and chemical fumes are present in the air. Two species at least of the Knotweed or Snakeweed (*Polygonum*) do well under similar conditions, these being *P. bistorta* with pinky flowers, and *P. Brunonis*.

RUDBECKIA NEWMANII with its plentifully produced yellow flowers and dark centres is also of value for town gardening, and this may also be said of *Statice Tartarica*, which produces dense heads of pinky flowers.

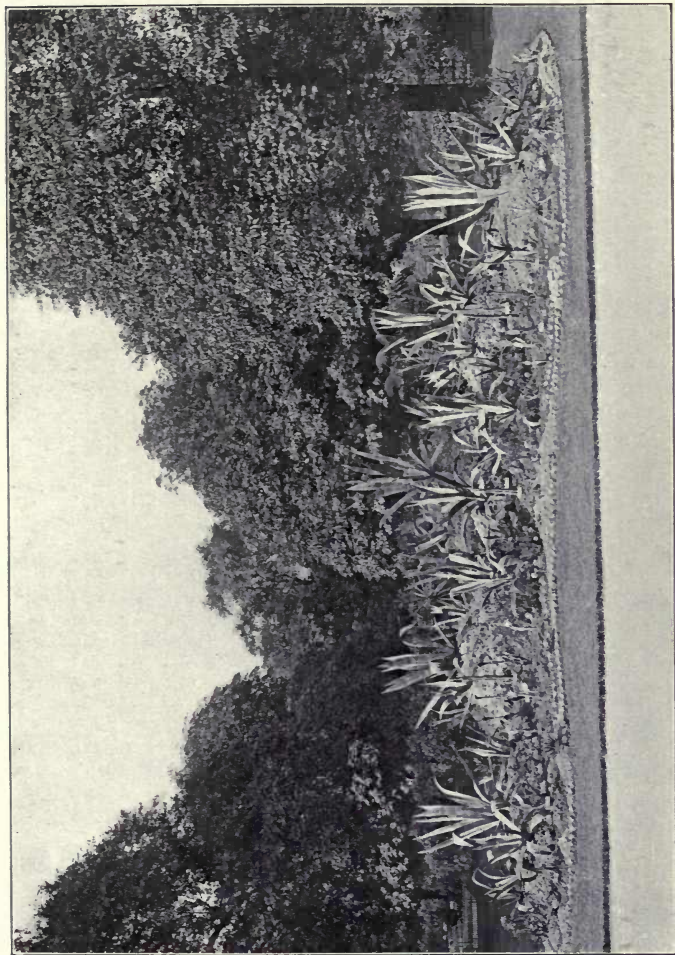
THALICTRUM AQUILEGIFOLIUM, with its large plume-like white flowers, and the variety *rubrum*, with rosy-pink flowers, have both done well in a London garden for several years. They like good, yellow, dampish loam. Generally, hairy-leaved plants are not suited for planting where dust and soot abound, but exceptions will be found in the MULLEINS (*Verbascum*), quite a number of which are excellent town plants. *V. Olympicum* and *V. Blattaria* are perhaps two of the best.

YUCCAS are well suited for planting in smoky localities, particularly when soil and site are

carefully taken into account. *Y. filamentosa*, *Y. gloriosa*, *Y. recurva*, and *Y. Whippleyi* are all desirable species.

Amongst ferns few are adapted for planting out of doors in smoky localities. The ROYAL FERN has, however, done well in Regent's Park for a number of years, and the same may be said of the MALE FERN (*Lastrea*) and the CRISPED HART'S TONGUE (*Scolopendrium vulgare crispum*). A specimen of the HARD FERN (*Blechnum spicant*) brought from Scotland and planted against a stone on a London rockwork looks as healthy and happy as it did ten years ago when transferred from its native wilds.

BULBOUS PLANTS.—Several species of NARCISSUS, SCILLA, CHIONODOXA and CROCUS, when planted in the London parks, not only flower freely, but increase from year to year. The most suitable situation is amongst the grass where the bulbs are not molested and where they quickly get established and increase in quantity. The best Narcissus for wild gardening are *Sir Watkin*, *Pseudo-narcissus*,



SUCCULENT PLANTS IN A TOWN GARDEN

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poeticus, and *obvallaris*. Crocus of all kinds do remarkably well when not disturbed and often increase rapidly. *Scilla sibirica*, *S. amoena*, *S. campanulata*, and *Chionodoxa Luciliæ* have all become established in masses, and annually produce an abundance of flowers where planted on the grass in Regent's Park. Many visitors to the London parks are surprised how well HYACINTHS and TULIPS thrive in the midst of their smoky surroundings. This is, however, readily accounted for by the total renewal of the bulbs each year and by the care in preparation of the soil in which they are planted. Thorough trenching and manuring is annually engaged in, while the addition of a quantity of fresh lime to each bed or border goes a long way in sweetening the soil and counteracting the deleterious effects of its chemically impure ingredients.

CHAPTER XI

ROCK AND ALPINE PLANTS FOR THE TOWN GARDEN

SMOKE and dust are bad enough, but when in addition, we have to contend with the London fogs, it is then that Alpine and rock plants fare worst. The chemical impurities of a foggy town atmosphere, which often are positively hurtful to the eyes, are deadly to plant life generally, and, after a continuation of two days, the leaves of many plants, not only out of doors, but in our plant houses as well, fall off prematurely as if seared by frost or fire. So bad are these fogs, the dense yellow in particular, that after a continuance of two or three days the accumulation of greasy, sooty deposit on the glass renders the plant houses quite dark within and resort to

washing is imperative. The following observations on such rock and Alpine plants as have been found most suitable for planting in a town garden are the result of many years of study and experiment, and have, in the main, been collected from several of the most smoke-infested parts of London and other large cities. Probably the best all-round plants for the rock garden are the various species of dwarf Iris, many of which will not only succeed but absolutely flourish, where soot and smoke are the order of the day. In corroboration of this we have only to visit some of the gardens in the East End of London, or at Lambeth and Bermondsey, and see how well these plants are suited for doing battle with the impurities of a town atmosphere. In the grounds of the Royal Mint or in the gardens attached to the Tower of London, where the atmospheric conditions are too well known to require comment, the various kinds of Iris flourish amazingly. Even in dry, poor soil, the appearance of which strikes one as sooty in the extreme, the commonly cultivated species

thrives in a commendable way and goes on steadily increasing from year to year. Some of the best varieties of the Iris for rockwork are *I. ochroleuca*, *I. sibirica*, *I. germanica*, *I. gigantea* and *I. Pumila* in variety. Of that most useful of rock plants the Saxifrage, few are really suited for growing in London, by far the best being the well-known London Pride (*Saxifraga umbrosa*), which, as an all-round showy evergreen for smoky localities, has few equals. *S. cæspitosa* is another excellent species and thrives well in the very heart of the great metropolis. *S. Andrewsii* and *S. dentata* have also done well for seven years in a town garden. Curious as it may appear the choice little *Azalea procumbens*, from the highest granite mountains of Scotland, has become quite established in a London garden, where the air must be vastly different from that at the high altitude at which it is found growing naturally. The nearly allied *Arctostaphylos Uva-ursi* (the Bearberry) has also done well, and in one instance increased from a small plant till it



ROCK PLANTS IN A LONDON GARDEN

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now covers quite a square yard of ground surface. An excellent shrub for town planting is *Genista sagittalis*, which to my knowledge has grown and flowered freely on a rockwork in the centre of London for the past ten years. Another excellent Alpine is the Prophet Flower (*Arnebia echioides*), which for many years has charmed us with its curious yellow flowers, the black marking of which gradually gives way with age and from which the popular name of the plant was given. Several species of *Campanula* actually revel in the town atmosphere, notably our native *C. Trachelium* and *C. rapunculus*, both of which may be seen in various parts of London running about rampant and flowering profusely. Of the more showy flowered kinds, the most notable for surviving where the air is chemically impure are *C. carpatica*, in variety, *C. persicifolia* (various varieties), *C. turbinata*, *C. lactiflora*, *C. punctata*, and *C. rotundifolia*, a patch of the latter having flowered annually in a town garden for the past eight years. Two other desirable kinds are *G. F.*

Wilson and *Van Houttei*. Auriculas are well adapted for and most useful on the town rockery, where they flower with the utmost freedom; which also may be said of that useful wall plant the Toadflax (*Linaria cymbalaria*). The free growing and remarkably handsome *L. pallida* also does well and produces its flowers in profusion, while *L. hepaticifolia* and *L. hederacea* are also desirable. Few species of Primula are adapted for smoky localities, though the too little known *P. Sieboldii* has been found peculiarly suited for the London garden, where it flowers and increases freely. Amongst Orchids that I have found amenable to cultivation in the town garden, particular mention may be made of the MOCASSIN FLOWER (*Cypripedium spectabile*) and the ENGLISH LADY'S SLIPPER (*C. Calceolus*), the former having become established in a shady, dampish corner of my garden, where it annually produces from six to fifteen flowers. Growing in the company of EMPETRUM and VACCINIUM the MADEIRA ORCHID (*O. foliosa*) seems to grow and

flower by the pond side in Regent's Park. *ASTER ALPINUS* has also survived and flowered freely for a number of years where constantly subjected to smoke, dust, and other impurities which are connected with a town atmosphere. *Calceolaria Polyrhiza* has become quite established and increases rapidly in the town garden, the single deep yellow flowers being freely produced. Two species of *WILLOW* also thrive, these including the choice little *Salix reticulata*, with its beautifully reticulated leaves and neat procumbent habit of growth, and the equally choice and dwarf *S. herbacea*. Neither has received any particular care as to choice of soil or site. *ARABIS ALBIDA* and its double flowering variety are both useful plants for the rock garden, where they increase and flower freely. *STATICE SPATHULATA* and the neat dwarf *S. speciosa* have both thriven well in a town garden for the past ten years. They are interesting evergreens, with pretty lilac, almost everlasting flowers, and seem to succeed best when planted in gritty loam and

in full sunshine. Several of the Rock Roses (*Helianthemum*) have become quite established in a London garden, where they have received little attention either in the matter of soil or site. They certainly like sunshine and not too heavy soil. There are many worthy varieties. The conspicuous *Megasea cordifolia* must not be omitted from a list of town plants, as in many places it not only flowers freely but goes on increasing in size and strength from year to year. The Foam Flower (*Tiarella cordifolia*) is one of the best of town plants, where it not only looks healthy and happy, but rapidly increases and is by no means difficult to please in the matter of soil; which also may be said of *Francoa sonchifolia* and *F. ramosa*. *Heuchera sanguinea* is also valuable for planting in smoky localities, although *H. brizoides gracillima* does better. With the exception of *Gentiana lutea* and *G. asclepiadea* none of the Gentians have been found suitable for town planting. Both these species have stood for ten years in a London garden. *Erinus alpinus*

does fairly well and reproduces itself freely from seed on a dry earth wall, but the Winter fogs kill it off in quantity. *Scabiosa caucasica alba* has flowered freely in a town garden for the past seven years, and, though it does not increase, yet the annual growth is satisfactory. Of Sedums the common Stonecrop (*Sedum acre*) is useful for covering patches of the rock garden, while *S. glaucum* may also be relied upon as a fairly satisfactory plant when used in smoky localities. *Sedum rhodiola* is a capital plant for smoky localities, where it gains in strength each year and flowers profusely. Two kinds of Thrift (*Armeria*) do well, the showiest being *A. Cephhalotes rubra*, which sends its bright pink flowers well above the tufted green foliage. Both it and *A. vulgaris alba* are excellent town plants and show off to good advantage in the rock garden when planted in clumps. Of the Meadow Rue (*Thalictrum*), two species thrive in a fairly satisfactory way—indeed, have done well for several years past: they are *T. alpinum*, a neat and very desir-

able plant for the rock garden, and *T. adiantifolium*. *Trollius asiaticus fl. pl.* is another plant of dwarf growth that cheers us annually with its heads of double golden flowers, and has survived for many years in a town garden. All the Coltsfoots (*Tussilago*) do well, but particularly *T. alpina* and the Winter Heliotrope (*T. fragrans*). *Valeriana montana*, too, has done well and increases in quantity, the heads of bright pinky flowers being freely produced. Several species of *Verbascum* do uncommonly well in a town atmosphere, perhaps the best being *V. olympicum*, with its showy and irregularly produced yellow flowers, and *V. phœniceum*. The Periwinkles, when established, thrive well in smoky localities, particularly when planted beneath trees on rockwork. Yuccas are capital plants for the rock garden, where they succeed well, even in the very midst of dust and smoke. *Plumbago Larpentæ* has few equals for withstanding the deleterious effects of the most impure of town atmospheres, and towards Autumn is one of the brightest foliaged plants

of the rock garden. Two species of *Geranium*—*G. sanguineum* and *G. cinereum*—are peculiarly suited for withstanding soot, smoke, and fog, and have not only charmed us with their wealth of flowers, but increased in size and strength. A dwarf Thorn (*Cratægus inermis compacta*), barely 15 in. high, though nearly twenty years old, and *Cotoneaster adpressa*, are excellent low-growing shrubs for the smoky garden. The pretty white flowered *Iberis correæfolia* is a charming town plant and when established in masses is particularly effective. *Euonymus radicans kewensis* has become quite established and seems to do well as a town plant, and, being of procumbent growth, is admirably suited for the rock garden. Few plants are, however, better suited for growing in the most smoke-infested parts of London than the Moneywort or Creeping Jenny (*Lysimachia Nummularia*). In many parts of the East End, where filth and smoke are the order of the day, this pretty plant may be seen thriving to perfection—in fact, it may be described as peculiarly suitable

for such situations. Whether as a window plant or in the open ground, it never fails to cheer one by its rich green foliage and wealth of golden yellow flowers. Roses on the whole are not very suitable for the town garden, though several of the dwarf Chinese kinds have done remarkably well on a rockwork in the heart of London for the past seven years. *Rosa Wichuriana* is excellent for a stony bank and would appear to be little affected by the soot and other impurities of the town atmosphere, while the beautiful *Grüss an Teplitz* has perhaps no equal for smoky localities. The following roses are to be recommended:—Augustine Guinoisseau, Caroline Testout, Captain Hayward, Dupuy Jamain, Frau Karl Druschki, Grace Darling, Gruss an Teplitz, Killarney, Madame Abel Chatenay, Margaret Dickson, Mrs. John Laing, Mrs. W. J. Grant, Mrs. Sharman-Crawford, Tom Wood, Jeannie Dickson.

Anemone pennsylvanica and *A. rivularis* do fairly well—indeed, the former has been established for many years, while the latter

produces its big white flowers in profusion. The Scillas all do well, and particularly so the species of Allium, while Narcissus are not to be despised. Out of a large number of Alpine and rock plants that I have experimented with, the above are the most suitable and reliable for town gardening, especially in London. There are others, however, that do well for a few years, but gradually become less in size and floriferousness and ultimately die out altogether. By procuring strong, well-rooted specimens and planting these in suitable soil, half the victory in getting rock and Alpine plants to become established in town and city gardens is accomplished.

CHAPTER XII

WINDOW PLANTS AND PLANTS FOR HANGING BASKETS

AN excellent object lesson in the plants that are most suitable for gardening in the East End of London and other smoke-infested quarters may be seen at the "Country in Town Exhibition" which is held annually for fourteen days in the Town Hall, Stepney. There the pots of Creeping Jenny, Ivy, and other suitable plants for cultivating where the air is contaminated with impurities, do credit to the exhibitors and show us what perseverance and a knowledge of plant life under exceptionally adverse conditions of soil and atmosphere can bring about. The exhibit from Regent's Park, by authority of the First Commissioner of Works, shows at a glance the

most suitable trees, shrubs, and other plants for town gardening. It is surprising, too, to what a state of perfection the slum dwellers in East Greenwich, Deptford, Lambeth, and other districts where the air is vitiated by impurities, can bring their box and window plants. Indeed, some of the big pans of Creeping Jenny and White and Blue Campanula (which, by the by, are *par excellence* the plants for confined districts where the air is heated and impure) that I have seen exhibited would do credit to country cultivators. But almost everywhere over London, particularly in the poorer quarters and where the air is most impure, I have noticed how well certain species are made to succeed, whether used as pot or box plants or for the decoration of the tiny patch of back garden. At many of the local flower shows, too, one is amazed at the condition of the plants that are brought for exhibition, and certainly some of the best grown and trained specimens of window box plants come from the worst slums of the great metropolis.

THE MONEY WORT or CREEPING JENNY (*Lysimachia Nummularia*) evidently is well suited for window culture in the most smoky parts of our larger towns. Planted in good dampish loam, it soon spreads about and quickly forms a mass of healthy foliage, which during the summer is studded with its myriads of golden flowers. At an exhibition held in what might well be described as the smokiest and most confined of the London districts it was surprising to what a pitch of perfection the cultivation of this poor man's flower had been brought. From out of the narrow, confined streets where an impure, smoke-laden atmosphere must ever be present, no less than fifteen large pots and pans of the *Lysimachia* were brought, each vying with the other in point of general health and floriferousness. It is certainly a capital town plant, of simple requirements, and one of the showiest, when in flower, that could be named.

CAMPANULA MAYII and C. ISOPHYLLA ALBA are most successfully used as window

plants throughout London generally. They seem by no means averse to a heated, smoky atmosphere, and, being of ready cultural requirements, are well adapted for growth under the trying conditions to which they are subjected in towns and cities. They do best and show off their beautiful, semi-pendulous flowers to advantage when used as hanging plants—a use to which both the plants are largely put throughout London generally.

THE COMMON IVY and several of the best cut-leaved varieties, particularly emerald gem, succeed well as pot plants in smoky parts of our towns, and for this reason they are largely used as window plants when trained against a small trellis work that has been erected in the pot in which the plant is growing. The variety *laciniata* and the large-leaved Irish form would also appear to be most commonly in use for window decoration, and when neatly grown against a trellis they have indeed a pleasing effect.

Several species of CACTI are also grown successfully by the dwellers in the East End

of London, and at some of the flower shows the perfection of culture to which they have been brought is surprising.

GERANIUMS, of course, do well as window plants everywhere in the metropolis, the readiest to manage, judging from what one sees, being the green-leaved forms. Fuchsias are not so satisfactory, though well-grown specimens in the windows of the poorer inhabitants of our narrow dusty streets are not uncommon.

THE COMMON VERBENA or Cherry Pie is sometimes seen as a window plant in London, where, for a time, even in dusty, smoky districts it appears to flourish.

EUONYMUS RADICANS VARIEGATA is often used for pot culture in London, where it succeeds well if studied as to the class of soil in which it is planted, and that not too much moisture is present at the root.

FERNS are also useful as window plants for smoky towns, the two best perhaps being *Pteris cretica* and *Asplenium bulbiferum*.

SAXIFRAGA SARMENTOSA (*Mother of Thousands*) may often be seen growing and flowering freely in the most smoky parts of our larger towns, and is an excellent plant for such situations. The bundles of hairy leaves, veined white, and pretty slender runners render the plant a favourite with cultivators. Its requirements in the way of soil and management are simple.

The variegated leaved NEPETA GLECHOMA, of trailing habit and with highly aromatic silvery variegated leaves, also finds favour with the dwellers in the slums of London.

ECHEVERIA METALLICA GLAUCA should also be included amongst the best of window plants where smoke and soot abound; which may also be said of *Mesembryanthemum cordifolium variegatum*, both useful plants and of simple requirements.

No doubt one of the best plants for the town window—indeed, for internal decoration of any kind—is the well known *Aspidistra lurida variegata*. Its powers of withstanding

smoke, gas, and general atmospheric impurities are well known and have earned for the plant a reputation for general indoor culture that is, perhaps, shared by no other species. There are both green and variegated leaved forms.

Several species of *Veronica* are well adapted for the more heated, dusty and smoky parts of towns. The box-leaved *Veronica V. buxifolia* and *V. Traversii* are both used largely in many parts of London, as at Lambeth, Whitechapel, Stratford, and Chelsea, either as indoor plants or for table decoration.

PLANTS FOR HANGING BASKETS.—It is surprising to what an extent basket plants are used for decorative purposes in the poorer quarters of London and other large towns. As window plants or for ornamenting the usually small and confined yard or patch of garden quite a number of trailing plants are admissible and are largely employed for this purpose. Even in the most smoky and dusty parts of the metropolis the high state of perfection to which the cultivation of these plants

has in many instances been brought would hardly be credited unless by those who are directly interested in the matter or who see them as exhibited at some of our local, urban, and suburban shows. Two species of *Campanula* (*C. Mayii* and *C. isophylla alba*), the well known Creeping Jenny (*Lysimachia Nummularia*), the variegated *Nepeta Glechoma*, *Asparagus Sprengeri*, and the readily cultivated *Saxifraga sarmentosa* and its beautiful three-coloured variety (*tricolor superba*) are all in common use for planting in hanging baskets and pots. The pale lavender blue flowers of *Campanula Mayii* and the abundantly-produced pure white flowers of *C. isophylla alba* are charming when seen suspended from a pot or basket; while the favourite Mother of Thousands (*Saxifraga sarmentosa*), with its bunches of hairy leaves, which are distinctly veined with white and spikes of white flowers, render it both distinct and desirable for the suspended pot or basket. As to the merits of Creeping Jenny (*Lysimachia*), it has probably no equal

whether for ease of culture or the rich abundance in which the creamy-yellow flowers are produced. It is not uncommon to see pans as much as 18 in. in diameter thickly covered with this accommodating plant, and producing its golden flowers with the greatest freedom. For the porch, window, or summer house, and whether in pot or basket, the elegant *Asparagus Sprengeri*, with its long trails of shining green foliage, is peculiarly suitable, and, as taking the place of fern leaves in a cut state, has few equals. The pretty and neat little Geranium-like creeping plant *Nepeta Glechoma variegata*, with its graceful aromatic trails of foliage, is a charming companion to any of the above.

Several varieties of the Ivy-leaved Geranium are suitable for hanging baskets, and of Fuchsias the justly popular *F. Golden Treasure* and *F. procumbens* are most useful.

The smaller growing cut-leaved Ivies such as Emerald Gem, *laciniata*, and *conglomerata*, are all adapted for basket and pot culture, the long drooping shoots and neat evergreen

foliage making them bright subjects at any time of the year. The cultivation of these plants in baskets or pots is simple, but a point that must never be neglected is to ensure that the soil is kept in a uniformly damp condition, neglect of which will soon cause the healthiest and strongest specimens to become sparse of foliage and meagre in appearance.

ROOM PLANTS FOR DARK CORNERS.—It is surprising how well certain plants succeed and how green they appear when grown in quite dark corners of the dwelling house. We have notable examples of this in *Aspidistra lurida*, the India-rubber Plant (*Ficus*), some of the Kentias and Phoenix and one or two kinds of Ferns, notably *Asplenium bulbiferum* and *Polystichum angulare proliferum*. Given good treatment in the matter of soil and watering and not exposed to undue draughts, it is truly surprising the dark green appearance that these plants will wear, certainly out of all proportion to that which they assume when grown in full light and under

what would be considered the more congenial surroundings of a greenhouse. *Kentia belmoreana* and *Phoenix Roebelinii* are two excellent Palms for darkened rooms.

CARE OF ROOM PLANTS.—The problem of how to keep room and window plants, particularly such as are grown under the adverse conditions connected with town cultivation, in a healthy condition is a most perplexing one. Under congenial environments, such as with plenty of light, air, and atmospheric moisture, little difficulty will be presented; but in the dwelling house these conditions are entirely changed, and the dry heated atmosphere, often surcharged with gas and darkened conditions, all tell hardly on the health of the plants.

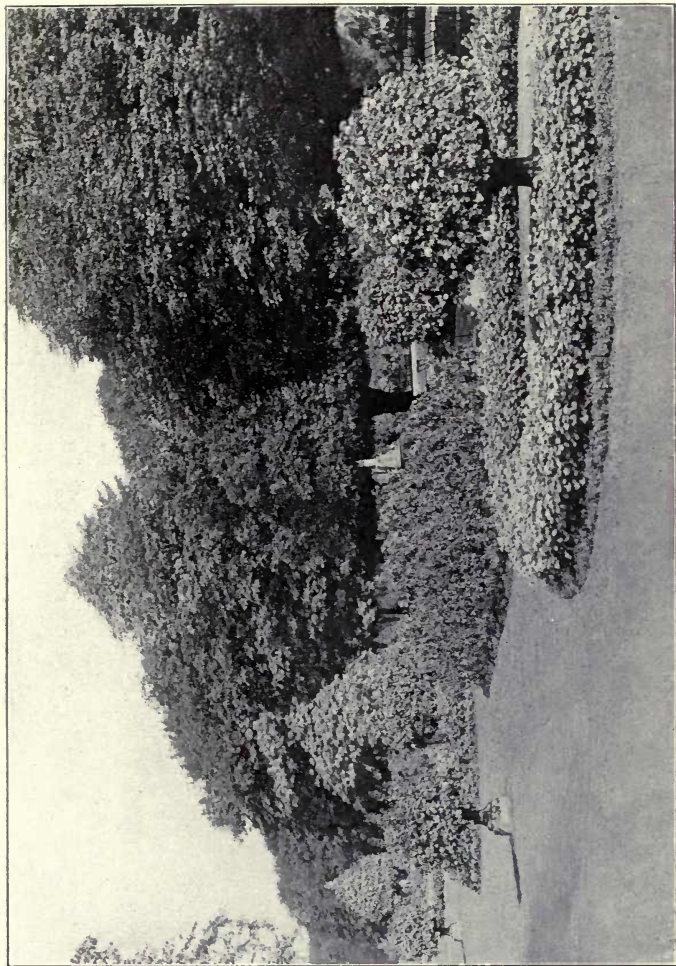
However, by choosing the most suitable subjects, attending carefully to the question of soil and potting, as also watering and keeping the foliage free from dust and dirt, much may be done to maintain room and window plants in a healthy and presentable condition. An occasional washing with tepid

water and a sponge will go a long way in maintaining the leaves in a bright and healthy condition, while uniformity of dampness in the soil must ever be retained. When water is required it is a good plan to place the pot in a pail of rain-water for not less than, say, ten minutes, by which means the ball of soil gets evenly and thoroughly moistened. In times of extreme cold an essential condition will be that the plants be comparatively dry at the root—indeed, from about November to March this is a point that should receive careful attention. Of course, when growing in a dry heated room more water will be required, but when a fire is only occasionally lit and there is no gas, such plants as the *Aspidistra*, *Kentia*, and Ferns would not require water oftener than every ten days.

CHAPTER XIII

BEDDING PLANTS

SO-CALLED bedding plants that are grown under glass and only planted out during Summer, when atmospheric conditions are most favourable for vegetation generally, naturally succeed well, especially if strong, healthy specimens and suitable soil composts are used. There are, however, some species that do much better than others when subjected to the impure atmosphere of our town gardens, and of these the following may be recommended:—FUCHSIAS of most kinds are well suited for planting where smoke and dust abound, and at several places in London—notably the Royal Mint—several varieties of *Fuchsia* have been found preferable to most other plants when used for bedding purposes.



BEDDING PLANTS

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THE
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MUSEI HISTORICO-NATURALIS
MUSEI HISTORICO-NATURALIS

The procumbent and beautiful-leaved variety named Golden Treasure grows with unusual luxuriance. Some of the best Fuchsias for town gardening are Display, Meteor, Empress Eugene, Mrs. Marshall, Golden Treasure, and Madame Cornellion.

GERANIUMS, as every one knows, succeed well and are used largely as bedding plants in every part of the metropolis, some of the best being Paul Crampel, Flower of Spring, the Ivy-leaved, Mrs. Jacoby, Lucrece, and Princess of Wales.

CALCEOLARIA BURBIDGEI is a capital town plant, of noble port and very floriferous.

HELIOTROPES also do well, the three best being Lord Roberts, President Garfield, and Miss Nightingale.

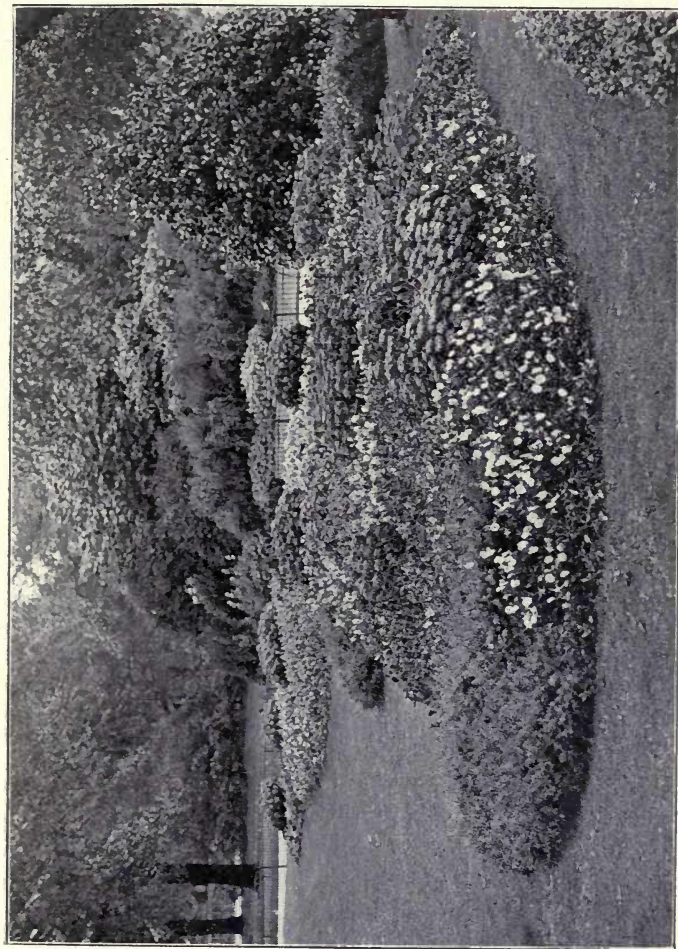
SALVIAS are very ornamental bedding plants, but if exposed to great extremes of temperature lose their leaves and become shabby. One of the best is Glory of Zurich.

BEGONIAS, especially the tuberous-rooted and *semperflorens* type, are not to be recommended for smoky parts of the metropolis, but

where the air is fairly pure they succeed and are highly ornamental.

ABUTILON THOMPSONII is a valuable foliage plant for the town garden, where it succeeds well even in very confined quarters. DRACÆNA CONGESTA and some of the Agaves are amongst the most useful of foliage plants for the town garden, and they are able to resist a great amount of smoke, dust, and heat. The common white, perpetual-flowering Marguerite (*Chrysanthemum*) is one of the most valuable town plants we possess, and is cultivated in several of our town squares and confined spaces where few other plants could succeed; of splendid constitution and free-flowering, it is always a welcome plant wherever it is used, and blooms continuously for nearly four months of the year. There are worthless forms that produce only one set of flowers, but with the perpetual-flowering a continuation of blooming for the whole season may be relied upon. Triumph and Queen Alexandra are two of the best.

A bed of succulent plants has attractions



VIOLAS FOR TOWN PLANTING

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THE
BIBLIOTHECA
MUSEI HISTORICI
ROMANI

that differ from those of the general run of bedding plants. There are many kinds, and their quaint and curious forms can be displayed to advantage on an irregularly shaped bed or mound.

VIOLAS should on no account be omitted from the list of bedding plants that are suitable for town gardening, and how well they succeed may be seen by the large irregular mound of these which is annually planted in the flower garden at Regent's Park. There are many varieties, so that excellent effects may be obtained. One of the best bedding plants for withstanding smoke is the Ox-eye Daisy, and for this reason it is used in positions where other plants of a similar kind could not succeed. CANNAS are used for bedding in the London parks, but unless in open airy situations they cannot be generally recommended. There are many other plants in use for bedding purposes throughout our larger towns, such as Palms, *Grevillea robusta*, *Eucalyptus* of sorts, *Hydrangea* Thomas Hogg, and others.

Amongst ANNUALS that have from long

experience been found suitable for town gardening special mention must be made of the Marigold, Rocket, dwarf Pyrethrum, Balsam, and Lychnis. These four plants not only thrive, but actually seem to revel under the worst conditions of soil and atmosphere.

Thus, in the gardens attached to the Tower of London—one of the smokiest and most chemically impure of London atmospheres—these plants have for many years reproduced themselves from seed and flowered profusely.

For wild gardening in towns they have certainly few equals, and any plant that will thrive and reproduce its kind regularly for a number of years under such unfavourable surroundings is well worthy of attention. As dwarf edging plants for the town garden, the various forms of *Lobelia*, *Alyssum maritimum*, *Iresine Lindenii*, and *I. Wallacei* are to be preferred.

As before stated, almost any plant, if sufficiently hardy, will do well when transferred from the greenhouse to the open borders

during the summer months, so that the variety to choose from is very large.

LIST OF SUITABLE BEDDING PLANTS.—
Begonias (especially the tuberous ones), varieties of Zonal Pelargoniums, Salvias, Calceolarias, Fuchsias (many kinds), Gazanias, Ageratum, Lobelia, Marguerites, Nasturtiums and single Petunias for dry borders and hot corners. *Tropæolum* Mrs. Clibran (yellow), *Vesuvius* (crimson), and *coccineum elegans* (scarlet) are excellent and soon make a brilliant display in the poor soils in many town gardens. Then we have *Cineraria maritima*, *Cerastium tomentosum* and *Centaurea candidissima* to give a supply of silver leaved foliage, *Koniga* (*Alyssum*) *maritimum* to form a dense carpet, or for a neat edging to borders. Golden Feather supplies the yellow edging and *blue Lobelia* the blue edging. *Portulaca grandiflora* is a desirable plant for dry, sunny borders and it blossoms freely. Both the French and African Mari-golds and the pretty *Tagetes signata pumila* are very suitable for growing in poor soils.

Phlox Drummondi, Stocks and Asters, and Pansies and Violas ought to be freely grown, and hardy annuals from seeds sown in the borders where the plants are to blossom.

MOISTURE IN THE SOIL.—Frequently the plants after being bedded out and watered do not prove very satisfactory, owing to the soil being in a dry state at the time. The reason is because the water given does not reach the roots in sufficient quantity to enable them to get a good hold upon the soil, owing to the extreme dryness of the latter. Where the soil is very dry, it is a good plan to give a thorough soaking of water twice during the evening prior to the day when planting is to be done. Then the soil will be in a good condition as regards moisture, and if water be given to the newly planted borders immediately the work is finished the plants will grow without experiencing any check, and so quickly get established in their new quarters.

UNSUITABLE BEDDING PLANTS.—The following plants ought not to be used except in the more open parts, in good soil, and where

the atmosphere is fairly clear :—*Alternanthera*, Chilian Beet (grown chiefly in the flower garden on account of its beautifully coloured leaves), *Coleus* in variety, *Mesembryanthemums*, *Iresines*, tricolor *Geraniums*, *Zinnias*, *Verbenas*, *Cannas*, Castor Oil Plants (*Ricinus Gibsonii*), *Zea japonica* (the striped or variegated Maize) and *Acacias*. These are all very beautiful plants, and, when grown to perfection, they look charming in a garden ; but where they only just exist, then they make a garden look worse than it would with bare, unfilled borders.

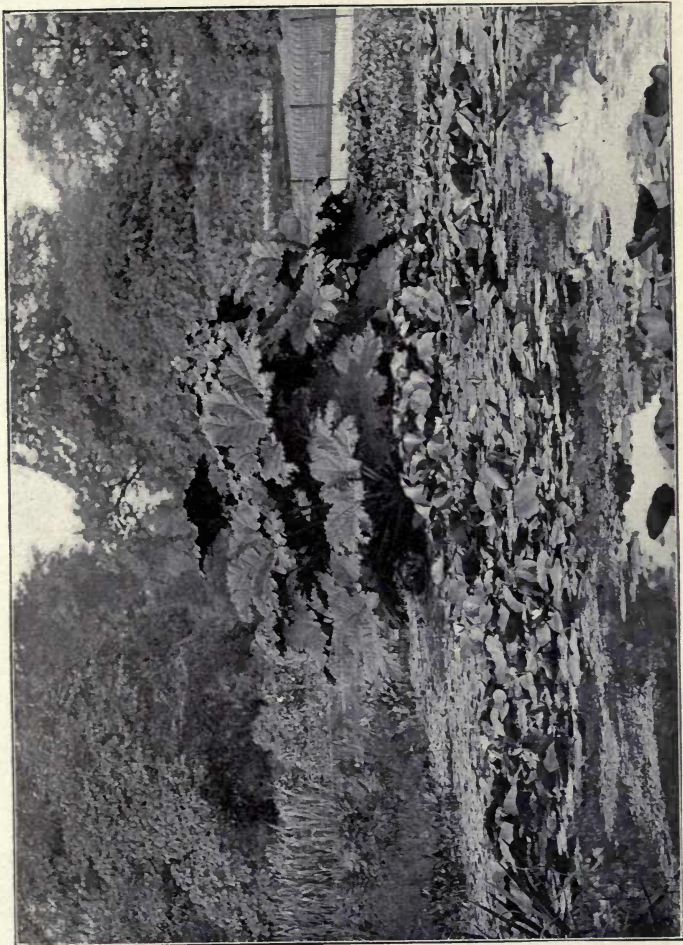
CHAPTER XIV

WATER PLANTS

SEVERAL species of aquatic plants do well when planted in ponds and other waters throughout the metropolis, and the beauty of these in several of the lakes in the London parks testify to how well suited they are for town planting.

One of the best is the Cape Pond Weed (*Aponogeton distachyon*), which not only flowers freely but reproduces itself from seed. The sweetly scented large white flowers with dark anthers are both conspicuous and ornamental.

THE FLOWERING RUSH (*Butomus umbellatus*) thrives vigorously in several ponds in smoky parts of London and may be considered a most desirable plant for such positions. It should be planted by the water margin. MENYANTHES



WATER PLANTS IN LONDON

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TRIFOLIATA (the Bog Bean) has become quite established in several waters in the metropolis, and its white horsechestnut-like flowers make it a general favourite. It is of stout growth and does well where the water is shallow. Perhaps one of the showiest of aquatic plants is the DOUBLE FLOWERED ARROW HEAD (*Sagittaria japonica fl. pl.*), which is of stout growth with arrow-shaped leaves and immense double white flowers. It is a gem for the town lake or pond. All the species of TYPHA do exceedingly well in shallow water and add quite a charm to the pond or lake side. T. MINIMA is especially suitable where the extent of water is small.

THE WATER VIOLET (*Hottonia palustris*) with its submerged fern-like leaves and snowy white flowers is another desirable aquatic plant; which may also be said of VILLARSIA NYMPHÆOIDES, both excellent species where the air is impure.

Of WATER LILIES many species would appear to do well, and the common yellow and white have succeeded in London waters for

many years. Some of Marliac's varieties also do well and are extremely showy, preferably the red and yellow forms. It might be mentioned that the Cape Pond Weed and one of Marliac's pink Water Lilies have succeeded well for the past ten years in a small pond in the very heart of London. Of course, when the water is renewed at frequent intervals aquatic plants have a much better chance of succeeding than when this is stagnant, and especially if polluted by soot and other atmospheric impurities.

CHAPTER XV

LAWNS AND GRASS PLOTS

EVERY ONE who is interested in town gardening knows how difficult it is to keep the grass plot or lawn in a healthy and presentable condition. Too often, indeed, it wears a miserable appearance and is positively an eyesore, the grasses being thin and weak of growth with patches of bare earth between or the better species become entirely ousted out by rank growing weeds. That there are certain parts of our towns and cities where grasses cannot be got to grow in a satisfactory manner is frankly acknowledged, but that much can be done to mitigate the attending evils of an impure, smoke-laden atmosphere I am quite convinced. Soil that has for long been exposed to the chemical and other fumes of our larger centres of industry

cannot carry a healthy crop of grass; so that not only is it necessary at the outset to provide a suitable medium for the grass to root amongst, but also to renew or enrich this at periodical intervals by suitable top dressings. Where it is intended to have a good lawn the ground should be carefully trenched over and a quantity of loam and thoroughly decomposed manure added. After this has been well consolidated either seed-sowing or turving should be resorted to, the work being preferably performed in early Spring. The turves should be cut of a uniform thickness, about 2 in., and a yard long by a foot wide. When transferred to the prepared ground, which should previously have been levelled and raked over, the turves should be carefully laid side by side and quite close to each other, so that little or no space for the admittance of air is left between the edges. The whole should then be rolled down and a sprinkling of fine sandy soil applied, this having a beneficial effect in filling up any cavities between the turf. Seed sowing may take place in March or April, according to the

weather, the most approved mixture for town gardens being about equal proportions of the following:—*Agrostis* (species), *Cynosurus cristatus*, *Festuca duriuscula*, *Poa pratensis*, Short Perennial Rye grass.

YARROW (*Achillea Millefolium*) thrives remarkably well in London, but has the probable disadvantage that being of strong growth it ousts out all other grass from the soil in which it is growing. A remarkable instance of this occurred last year at the British Museum, where the two plots of grass in front of this building were quite overrun by the Yarrow and the original grasses nearly all killed out. So thoroughly did the Yarrow overrun the ground that no less than three cartloads of the roots were removed before the ground was returfed. For dry banks, and especially where it can be allowed to flower, it is probably the best plant for smoky localities. The ANNUAL POA (*P. annua*) is another excellent grass for the London garden, particularly beneath trees, where it reproduces itself abundantly. Though hardly suitable for lawns, yet for odd corners

and beneath trees probably the best grasses are *Holcus mollis* and *Elymus arenarius*: both excellent subjects that seem to luxuriate in the atmosphere which is fatal to so many other herbs; they spread about freely and are remarkably verdant even in the smokiest localities. The after management of grass plots in towns is fraught with care and attention to the matter of top-dressing and keeping the grasses in a strong and healthy condition. For this purpose street sweepings, when allowed to lie for a few months and mixed with light earth, are particularly valuable, the mixture being applied in early Spring. Amongst the various chemical manures I have found none to equal "Phyto-broma," which has truly a marvellous effect in recuperating exhausted grass land in smoky districts. It should be sparingly applied with about six times its bulk of wood ashes or fine rich mould. In order to keep town turf in nice condition, mowing (which thickens and strengthens the grasses) and rolling should be regularly attended to.

CHAPTER XVI

TREE AND SHRUB GROWTH IN LONDON

WHEN the confined situation and impurities of the atmosphere are taken into account, it is surprising to what a state of perfection certain trees and shrubs attain in London. In proof of this we may point to the noble Plane trees that are to be found in many of our public squares and gardens, as also giant specimens of the Acacia, Elm, Poplar, Ailanthus, Mulberry, and Sumach, not to speak of numerous shrubs. But it is not only in the more open and healthy parts, but even in some of the smaller and more confined courts and areas in the very heart of the metropolis (where the height of the surrounding buildings almost shuts out the sunlight and prevents a free circulation of air,

and where the atmosphere is constantly smoky and impure), it is surprising that trees and shrubs are able to survive for even a very limited period of time. Take, as an example, the little, disused churchyard in Fen Court, Fenchurch Street: the few Ivies and Aucubas that are able to eke out an existence there have their leaves so thickly encrusted with soot and dust as to be scarcely recognisable; in fact, it is no exaggeration to say that at times the encrustation is as thick as the leaves. For all this they grow on from year to year, while the half-dozen Elm trees in the same place are wonderfully healthy when the confined area and impure atmosphere are taken into account. Again, at St. Giles-in-the-Fields, the *Euonymus* and *Aucuba* are scarcely recognisable, the stems and leaves being thickly encrusted with the soot and dirt that is so bountifully poured into this confined area from the chimneys of some of the works hard by. Yet they succeed after a fashion, as do also the Ivy, Common Fig, and Black Italian Poplar—the latter

better than the Plane. The Lambeth Borough Recreation ground is certainly surpassed by no other open space in London for a confined, smoky, and chemically impure atmosphere, and the few soot-begrimed Hollies and Euonymus that manfully struggle to eke out an existence in this worst of the pottery districts, though precious to the surrounding householders, are scarcely presentable from an ornamental point of view. At the Royal Mint, where the chemical fumes from the gold refining works are speedy death to most forms of vegetation, the Fastigate Poplar, the Acacia, and Plane trees do best, whilst among bedding plants it is a somewhat strange fact that the little edging Fuchsia, Golden Treasure succeeds admirably.

THE LONDON PLANE (*Platanus orientalis acerifolia*).—The magnificent specimens of the Plane that are to be seen in Portman, Cavendish, and Manchester Squares, or the equally fine old trees that are growing in Lincoln's Inn Fields or in the gardens of Gray's Inn and the Temple, clearly point out how

well suited this tree is for doing battle with the impurities of a town atmosphere. In Bedford, Russell, and Gordon Squares, too, there are many large and well grown examples of the Plane tree, some of which tower to fully 70 ft. in height, the branch spread being quite as much, while the smooth, well-rounded stems girth from 5 to 7 ft. at a yard from ground level. There are also many fine examples in our parks of the London Plane, such as those by the lake side in Regent's Park and on the north side of the Green Park. It is, however, not only in the more open squares and gardens that we find the Plane thriving in quite a satisfactory manner; but even in the most dense and confined parts of the City, where the tree is hemmed in by buildings and where the branches have scarcely room for development, it shows but little signs of the cramped and unnatural quarters to which it has been allotted, and where it so happily displays its marvellous capabilities in resisting almost every kind of adverse influence. Of this there are many examples throughout

London, as at Amen and Dean's Court, St. Paul's, in Wood Street, Cheapside, in Star Yard by the Law Courts, and in the Court of Stationers' Hall, Ludgate Hill, in all of which places this stateliest of our forest trees has scarcely room for branch development owing to the proximity of the adjoining buildings. For all this the Plane stands out conspicuous, for, by some special happy constitution in its nature, it not only thrives in the most confined and smoky localities, but, judging from its healthy, vigorous growth it absolutely appears to enjoy combating with the destructive influences that associate themselves with our larger centres of industry.

POPLARS.—Perhaps next to the Plane the trees that are found in greatest numbers throughout London are several species of Poplar, notably the Black Italian, the Lombardy, and the Balsam. Go where one will throughout the metropolis—both in urban and suburban districts, even in the most smoky parts—good examples of all these species are to be found. The Black Italian

would seem to be a special favourite and widely recognised as a tree to plant where doubts exist as to the chances of other kinds being able to survive. Even in the sulphurous air of the Lambeth potteries, or where constantly subjected to the noxious fumes from the manufactories which surround the disused churchyard of St. Giles-in-the-Fields, this tree grows freely and has attained to large dimensions. Though valuable as a town tree, yet the Italian Poplar has its drawbacks in that the weighty branches are apt to get broken over in stormy weather or to snap across without warning during the growing season, thus proving a source of danger to the public or the neighbouring property. The Fastigate Poplar, too, is one of the most popular of town trees, withstanding smoke well, growing rapidly, and soon forming a valuable screen fence at a moderate cost. There is no need to specify instances of where this upright-habited Poplar may be seen in London, it being one of the commonest trees and readily recognized by its com-

compact growth. Being quite hardy, of moderate size, and deliciously fragrant, the Balsam Poplar is particularly suitable for planting in the town garden or square, and healthy, thriving examples may be seen at many points along the Commercial Road and other parts of the East End; while at Lambeth, Stratford, and in several of our more fashionable City squares it would seem to do well. Probably a drawback is the sticky leaves and buds, which are apt to collect dust.

THE AILANTHUS (*A. glandulosa*) is another tree that is very widely planted throughout London, where it succeeds in a truly praiseworthy manner. In almost every district one meets with specimens of this tree, and, even in the chemically impure atmosphere of Lambeth and in close and confined areas where it is smothered with dust and soot and often exposed to excessive heat in Summer, the Ailanthus appears in all its glory and produces its ample bright green foliage in abundance. This tree should certainly be placed third on the list of such as

are able to successfully battle with the impurities of our great city. To what a size it attains when planted in fairly good soil and allowed room for root and branch development may be seen in several of the squares in the north and west end of the metropolis—specimens fully 70 ft. high and as much in spread of branches being not uncommon. It reproduces itself freely from suckers.

THE INDIAN BEAN (*Catalpa bignonioides*) is another excellent tree for planting in London, and visitors know it well by the goodly specimens which may be seen at Westminster and other parts of the city. But wherever one travels in the great metropolis the *Catalpa* is to be seen, and many old specimens of large size are to be found in the East End and in some of our disused burying-grounds. At Lambeth it does well in company with the *Ailanthus*, and at Chelsea, where the air is by no means pure, excellent examples of the tree may be seen. When the atmosphere was not so foul as at present, the Elm was recognized as a suitable tree for

every part of London, and the fine old examples in the grounds of Fulham Palace and at Aldgate testify to the size to which it attained. The Fulham trees were planted, as before stated, when the atmosphere was comparatively free from impurities, and it is questionable whether nowadays specimens of equal size could be produced. There are, however, many good examples of both the English and Wych Elm in the outskirts of London. The Weeping Dutch Elm would appear to be more suitable for town planting than the species, and is much used in cemeteries and small grounds throughout the metropolis. One of the largest specimens is growing in the grounds of the Royal Botanical Society of London, while several of smaller size, but in robust health, may be seen in the flower garden at Regent's Park. Other good examples may be seen at the Mint entrance to the gardens of the Tower of London, at Holborn, and in Bloomsbury Square. It forms a useful arbour tree, and, being of neat, confined growth, and bearing pruning

well, is to be recommended for positions where space is confined and where larger-growing trees would be out of place. Than the *weeping ash* few trees would appear better suited for planting in London. Almost everywhere one meets with it: within a stone's throw of Liverpool Street Railway Station, where hemmed in by bricks and mortar, at Holborn Viaduct, in the foul air of old Paddington Cemetery, or in the equally tainted atmosphere of Mark Lane and Billingsgate; and in every position its healthy appearance would indicate that it is one of the best trees for withstanding the combined effects of heat, dust, and smoke. In connexion with the *Weeping Ash*, it is a somewhat curious fact that distinct varieties of certain trees are decidedly better suited than the species for planting as town trees, and as instances we may point out the *London Plane*, which is a well-marked and distinct variety of the *Eastern Plane*, the *Weeping or Dutch Elm*, and the *Weeping Ash*, all of which are preferable to the parent plants for withstanding the

effects of an impure town atmosphere. Being of not too rampant growth and an excellent bower tree, this Weeping Ash has been largely planted in the squares and gardens of London, while its graceful weeping habit has made it a favourite tree for the graveyard or cemetery.

All the ACACIAS (*Robinia*) are to be recommended for town planting, and may be found everywhere throughout the metropolis. Even during unusually dry and hot seasons when the whole of the ordinary vegetation is burnt up—the Lime and Elm looking seared and sickly and premature leaf shedding going on around us—the Acacia stands nobly out in all its freshness of leaf and branch, and, if anything, blooms all the more freely for the scorching and want of moisture to which it has been subjected. The Common or False Acacia is also rendered of particular value for town planting, owing to its retaining its rich verdure till well on in Autumn, while it is by no means difficult to satisfy in the matter of soil—desirable qualities in a

London tree. Good examples of the Acacia may be found in almost every part of London, even in the most smoky and confined—as at the Royal Mint, at Lambeth, and in most of our squares and gardens. For confined positions the variety INERMIS is to be recommended, being a small-growing, round-headed variety with the brightest of pea-green foliage. It is usually seen as a standard from 10 to 12 ft. high, and is not uncommon in many parts of London, particularly suburban districts.

THE MULBERRY (*Morus nigra*) can lay claim to being one of the best trees for planting in London, and numerous fine old specimens, many a century old, are to be seen scattered over the metropolis. Even where the atmosphere is chemically impure, as at Lambeth, the Mulberry has attained to a large size, and, judging from its healthy, well-developed foliage, would almost appear to revel where smoke and dust are the order of the day. In many of our public squares in the West End, and Shoreditch and Poplar

in the East, and in all the Northern districts, the Mulberry may be seen in a flourishing condition, many specimens having attained to a large size and good old age. By the side of Camden Road, and where exposed to the constant dust and smoke of the adjoining railway, a fine example of the Mulberry may be seen, as also at Stratford and Bermondsey. There are large examples, too, of the Mulberry in Elm Park Gardens and other parts of Chelsea and Kensington, as also in the gardens attached to the Tower of London. Other remarkable Mulberries are those in Finsbury Circus Gardens and at Westminster, the latter situated behind a brick wall at the bend of Great Smith Street, between the buildings of the Church House and the office of the Westminster Coroner, and nearly opposite the free public library. It has been this season in full foliage and most prolific in berries, a fact that passers-by can vouch for by looking at the pavement, which is stained for many feet by the falling berries. The age claimed for this tree is a very great one,

some people asserting that it existed in far-off days in the Abbot's garden or orchard, which may be right, for a plan of Dean Stanley's "Memorials of Westminster Abbey," showing the precinct as it was "about 1536," shows the orchard to be pretty close to where this tree stands. It is apparently about 30 ft. high, its trunk being somewhere about a foot in diameter.

THE STAG'S-HORN SUMACH (*Rhus typhina*) may also be found widely distributed over London and thriving satisfactorily in many of the East End gardens, as also at Lambeth and Stratford, all of which places have been found by no means conducive to tree or shrub growth. In some of the more open and less smoky districts of the metropolis, as at Kensington and Westbourne, the Sumach has attained to a goodly size, flowers freely, and is charming in Autumn by reason of the varied tints of the ample foliage. It is a tree of small growth, rarely exceeding 20 ft. in height, and of somewhat free and straggling habit of growth. Few soils come

amiss to it, and, sending out suckers freely, it is readily reproduced.

Than the COMMON HAWTHORN and the TANSY-LEAVED FORM (*Cratægus tanacetifolia*) few small growing trees are more suitable for planting in our smoky towns. In London it is surprising at what a number of smoke-infested, dirty districts, the Common Hawthorn is to be found growing in what, at least, must be described as a fairly satisfactory condition. Even amongst the tanneries at Bermondsey and the factories at Stratford, places hard to beat for smoke and smell, the Thorn thrives well, and each Spring dons a wealth of foliage that is quite surprising. The Tansy-leaved Thorn is equally suitable for smoky localities, and the Cockspur Thorn seems healthy and happy at the Tower of London.

THE SYCAMORE (*Acer Pseudo-platanus*). —This is an excellent tree for planting in smoky localities, and may be found in a flourishing condition in almost every part of the metropolis. Even where the noxious eman-

ations from alkali and other chemical works are most disastrous in their effects on vegetation generally, the Sycamore, but particularly the variegated leaved variety, is one of the few trees that will grow satisfactorily. At Bermondsey, Lambeth, and other equally confined and smoky parts of London, the Sycamore can be seen in a thriving condition, and, what is equally valuable, it reproduces itself freely from self-sown seed. In a dry, confined corner near Camden Town, where the sulphurous emanations from the railway cause even the hardy Elder to wince and seem unhappy, the Sycamore does well, and seedlings grow with a rapidity that is quite surprising. Few soils would seem to come amiss to the Sycamore, for even on rubbish heaps self-sown trees may be found in the perfection of health and growing freely. In Warrington, too (one of the most chemically impure of town atmospheres), Sheffield, and Liverpool, the Sycamore is a favourite tree and planted extensively.

In the MAIDENHAIR TREE (*Ginkgo biloba*)

we have a tree of distinct advantage for planting in London. It is, however, not generally recognized as a suitable subject for planting in smoky towns, but the several well-developed specimens that may be seen at various parts of the metropolis point out how well suited this tree is for town gardening. That the thick leathery leaves and strong constitution play an important part in keeping the tree free from disease is pretty evident, while the fact of the leaves being renewed annually must go a long way towards casting off the sooty nodules which work such havoc on the foliage of evergreens in general. It is a tree of rare beauty, and, being readily cultivated and adapted for planting in smoky districts, should be used more freely than at present in the decorating of our London squares and gardens. There is a healthy specimen growing by the side of the Commercial Road in the East End.

THE TULIP TREE (*Liriodendron tulipifera*) is another excellent subject for town planting and would appear to have a wonderful re-

cupervative power; for, scorched, blackened, and encrusted with soot and dirt as the foliage may appear at the end of the Summer, the following Spring it again puts forth a garb of the freshest and healthiest greenery. As an ornamental tree for the town square or garden it has few rivals, the remarkable four-lobed, truncate leaves, and tulip-like flowers placing the *Liriodendron* in the first rank of desirable garden and lawn trees. Large, well-furnished examples of the *Liriodendron* may be seen in several parts of the metropolis, but it is not well known and consequently planted but sparingly.

Several species of *PYRUS* are well adapted for planting throughout London, the best being *P. Aria* (the Beam Tree), *P. Aucuparia* (the Mountain Ash), *P. lobata*, and *P. domestica*. All may be seen in several of our gardens and squares, where they succeed well and are evidently long-lived.

THE COMMON LIME TREE may be found generally distributed over London, but it is not to be recommended for the most smoky

districts and in warm dry seasons is apt to lose its leaves prematurely. Where the situation is not too confined, and where soot and smoke do not abound in unusual quantity, the Lime thrives in a fairly satisfactory way, but in the worst parts the branch tips die back and the tree usually shows signs of distress—the fierce struggle with smoke and fumes being too great for its somewhat tender constitution. For avenue or screen purposes in the comparatively pure atmosphere of the London suburbs it has certainly few equals, while its ornamental appearance and shade-giving qualities place it high in the list of garden trees. It stands pruning with impunity, a point that, unfortunately, is often taken advantage of to convert one of our noblest forest trees into a dwarfed and contorted specimen for the confined garden or path-side. In some smoky parts of the metropolis, as at Shoreditch, Bermondsey, Lambeth, and Chelsea, the Lime may be seen in a fairly healthy condition when the impure atmosphere is taken into account.

THE HONEY LOCUST (*Gleditschia triacanthos*), though not well known in connexion with town planting, is yet a valuable tree for smoky localities, and a few well-developed specimens may be seen in various parts of the metropolis. But not only in London has this tree been found to succeed, for in Manchester and Liverpool several goodly specimens are to be seen, and in positions, too, where the impure atmosphere tells hardly on tree and shrub life generally.

In Clifford's Inn a healthy Ash about 50 ft. high may be seen; several specimens of the White Poplar grow by Commercial Street in the East End; while of the Black Italian Poplar a giant tree adorns the Gray's Inn Road.

SHRUB GROWTH. — Amongst shrubs that may be seen in a more or less thriving condition in London, special reference may be made to the Aucuba, Privet, Euonymus, Syringa, Colutea, Olearia, Forsythia, Osmanthus, Ribes, and others. Regarding the first four, it will be unnecessary to mention even

a few of the many localities where they are to be found growing freely throughout the metropolis—both in urban and suburban districts. Even in the most smoky and dusty parts the Aucuba, Privet, Euonymus, and Lilac thrive in an amazing manner, seeming almost to defy the atmospheric impurities with which they have to contend. *Olearia Haastii* is another excellent shrub for planting in London, and may be seen doing well in some of the most smoky parts, as at Lambeth, Red Lion Square, and in the Whitfield Gardens off Tottenham Court Road. The less common *O. macrodonta* is even superior to the present species for withstanding soot and dirt. The Flowering Currant seems to be peculiarly suited for thriving in the impurest of town atmospheres, and is quite at home in the East End of London, as also at Lambeth, in Soho Square, and in most of our public gardens. In the Bladder Senna (*Colutea*) we have a valuable shrub for planting in London, and good examples may be seen at Chancery Lane, by the Tower of London, and

in the chemically impure atmosphere of Lambeth and other adjoining places. *Vinca minor* (the Lesser Periwinkle) may be seen in quite a healthy condition in St. Paul's Churchyard and in the gardens of Lincoln's Inn Fields; while in Houndsditch both *Ampelopsis Veitchii* and the Common Ivy do remarkably well.

THE COMMON HAZEL is healthy and happy in the smoky, dusty grounds of the Home for Asiatics, East India Dock Road, as also in the Tower gardens.

THE BIRD CHERRY (*Cerasus Padus*) may be seen in good form within a stone's throw of the Royal Mint; while by the smoky and dusty Commercial Road a fairly large specimen of that by no means common London tree, *Ginkgo biloba*, may be seen.

Of Roses the following are found to do best in London:—Blanc Double de Coubert, Caroline Testout, Clio, Gloire de Margotten, Grace Darling, Gustave Regis, Hugh Dickson, Madame Georges Bruant, Madame Isaac Periere, Mrs. John Laing, Pink Rover, Ulrich

Brunner, Grüss an Teplitz, Ben Cant, Beauty of Waltham, Countess of Oxford, Duke of Teck, Duke of Edinburgh, Duke of Wellington, Fisher Holmes, Général Jacqueminot, Prince Camille de Rohan, Frau Karl Druschki, Mrs. Sharman Crawford, Mrs. Geo. Dickson, Ideal, Killarney, Mrs. J. W. Grant, Joseph Hill, Gloire Lyonnaise, Liberty, Marquis of Salisbury, Mildred Grant, Wichurianas, Alberic Barbier, René André, Dorothy Perkins, Lady Gay, Polyanthus, Crimson Rambler, Philadelphia, Queen Alexandra, Longworth Rambler, Blush Rambler, Psyche. The dwarf China Roses do well for rockwork ; also the dwarf Polyantha Roses.

CHAPTER XVII

LEAF SHEDDING

BY the beginning of October many deciduous trees in our larger centres of industry have lost nearly all their leaves and wear quite a wintry appearance, while the foliage of others is comparatively green and spring-like. The latter is a valuable trait in such trees as the Acacia, Ash (Common and Weeping), Ailanthus, Sumach, and others, and has of late years been taken advantage of in the planting of several of our squares and gardens. Amongst trees that shed their leaves at a comparatively early period of the year particular mention may be made of the Lime, Elm, Sycamore, and Horse Chestnut, all of which, especially during dry and warm Sum-

mers, have lost their leaves quite a month before those above mentioned.

In the following lists the best trees and shrubs for early and late leaf-shedding are recorded:—

Late leaf-shedding:—Acacia, Ash, Ailanthus, Catalpa, Fig, Lilac, Hawthorn, Maple, Mulberry, Plane, Sumach, Poplar.

Early leaf-shedding:—Chestnut, Elm, Lime, Laburnum, Sycamore, Elder.

CHAPTER XVIII

For convenience, we have arranged the following lists in an alphabetical manner, so that anyone can see at a glance the trees and shrubs which are best suited for withstanding the deleterious effects of an impure atmosphere.

TOWN TREES

| | |
|---|------------------------------------|
| <i>Acer macrophyllum.</i> | <i>Cratægus tanacetifolia.</i> |
| <i>Acer Pseudo-platanus.</i> | <i>Fraxinus excelsior pendula.</i> |
| <i>Acer Pseudo-platanus variegata.</i> | <i>Gleditschia triacanthos.</i> |
| <i>Æsculus Hippocastanum.</i> | <i>Ilex Aquifolium.</i> |
| <i>Ailanthus glandulosa.</i> | <i>Ilex balearica.</i> |
| <i>Alnus cordifolia.</i> | <i>Ilex Hodginsii.</i> |
| <i>Betula alba.</i> | <i>Juglans nigra.</i> |
| <i>Carpinus betulus.</i> | <i>Juglans regia.</i> |
| <i>Catalpa bignonioides.</i> | <i>Laburnum alpinum.</i> |
| <i>Cerasus (Prunus) (in variety).</i> | <i>Laburnum vulgare.</i> |
| <i>Cratægus Oxyacantha.</i> | <i>Liriodendron tulipifera.</i> |
| <i>Cratægus Oxyacantha flore pleno.</i> | <i>Magnolia acuminata.</i> |
| | <i>Magnolia glauca.</i> |
| | <i>Morus alba.</i> |

| | |
|---------------------------------|----------------------------|
| Morus nigra. | Retinospora plumosa aurea. |
| Olea Europæa. | Robinia Pseud-acacia. |
| Ostrya carpinifolia. | Robinia Pseud-acacia De |
| Pinus Austriaca. | caisneana. |
| Platanus orientalis acerifolia. | Robinia Pseud-acacia iner- |
| Populus alba. | mis. |
| Populus canadensis. | Robinia Pseud-acacia ma- |
| Populus fastigiata. | crophylla. |
| Populus nigra. | Robinia viscosa. |
| Prumnopitys elegans. | Salix fragilis. |
| Prunus mollis. | Salix purpurea. |
| Prunus Padus. | Salix purpurea regalis. |
| Pyrus Aria. | Sophora japonica. |
| Pyrus Aucuparia. | Taxodium distichum. |
| Pyrus lobata. | Taxus baccata. |
| Quercus Cerris. | Tilia Europæa. |
| Quercus Ilex. | |

TOWN SHRUBS

| | |
|--------------------------|-------------------------|
| Amelanchier botryapium. | Cistus laurifolius. |
| Ampelopsis Veitchii. | Colutea arborescens. |
| Amygdalus nana. | Cotoneaster frigida. |
| Arbutus Unedo. | Cotoneaster Simonsii. |
| Arctostaphylos Uva-ursi. | Cotoneaster thymifolia. |
| Aucuba japonica. | Cotoneaster vulgaris. |
| Berberis aquifolia. | Cydonia japonica. |
| Berberis vulgaris. | Cytisus purpureus. |
| Buddleia variabilis. | Daphne Laureola. |
| Buxus balearica. | Daphne Mezereon. |
| Buxus sempervirens. | Daphne pontica. |
| Castanopsis macrophylla. | Deutzia crenata. |
| Cistus ladaniferus. | Deutzia gracilis. |

| | |
|------------------------------------|-----------------------------------|
| <i>Deutzia gracilis latifolia.</i> | <i>Phillyrea latifolia.</i> |
| <i>Euonymus japonicus.</i> | <i>Phillyrea Vilmoriniana.</i> |
| <i>Euonymus radicans variegata</i> | <i>Rhamnus frangula.</i> |
| <i>Forsythia suspensa.</i> | <i>Rhus Cotinus.</i> |
| <i>Forsythia viridissima.</i> | <i>Ribes aureum.</i> |
| <i>Griselinia littoralis.</i> | <i>Ribes sanguinum.</i> |
| <i>Gymnocladus canadensis.</i> | <i>Ribes speciosum.</i> |
| <i>Hedera Helix</i> and varieties. | <i>Rubus laciniatus.</i> |
| <i>Hibiscus syriacus.</i> | <i>Skimmia japonica.</i> |
| <i>Hypericum calycinum.</i> | <i>Skimmia oblata.</i> |
| <i>Hypericum Nepalensis.</i> | <i>Stephanandra flexuosa.</i> |
| <i>Juniperus Sabina.</i> | <i>Syringa Josikæa.</i> |
| <i>Koelreuteria paniculata.</i> | <i>Syringa persica.</i> |
| <i>Leycesteria formosa.</i> | <i>Syringa vulgaris.</i> |
| <i>Ligustrum chinense.</i> | <i>Ulex europæus flore pleno.</i> |
| <i>Ligustrum coriaceum.</i> | <i>Viburnum opulus.</i> |
| <i>Ligustrum ovalifolium.</i> | <i>Viburnum plicatum.</i> |
| <i>Olearia Haastii.</i> | <i>Viburnum Tinus.</i> |
| <i>Olearia macrodonta.</i> | <i>Weigelia rosea.</i> |
| <i>Osmanthus ilicifolius.</i> | <i>Yucca gloriosa.</i> |
| <i>Philadelphus Gordonianus.</i> | <i>Yucca recurva.</i> |
| <i>Philadelphus grandiflorus.</i> | <i>Yucca Whippelii.</i> |

CLIMBING AND WALL PLANTS

| | |
|------------------------------|------------------------------------|
| <i>Abelia rupestris.</i> | <i>Cratægus Pyracantha</i> |
| <i>Ampelopsis Veitchii.</i> | <i>Lelandi.</i> |
| <i>Aristolochia Sipho.</i> | <i>Euonymus japonicus.</i> |
| <i>Ceanothus azureus.</i> | <i>Euonymus radicans variegata</i> |
| <i>Clematis montana.</i> | <i>Forsythia suspensa.</i> |
| <i>Cotoneaster Simonsii.</i> | <i>Forsythia viridissima.</i> |
| <i>Cratægus Pyracantha.</i> | <i>Garrya elliptica.</i> |

| | |
|-------------------------|---------------------------|
| Hedera Helix. | Lonicera sempervirens. |
| Hedera Helix laciniata. | Polygonum Baldschuanicum. |
| Humulus lupulus. | Pyrus japonica. |
| Jasminum nudiflorum. | Viburnum plicatum. |
| Jasminum officinale. | |

ALPINE AND HERBACEOUS PLANTS FOR
THE TOWN GARDEN

| | |
|--------------|-------------|
| Acanthus. | Erigeron. |
| Achillea. | Farfugium. |
| Agrostemma. | Festuca. |
| Ajuga. | Funkia. |
| Alyssum. | Geum. |
| Anchusa. | Helxine. |
| Anemone. | Heracleum. |
| Antennaria. | Humulus. |
| Arabis. | Iberis. |
| Armeria. | Lathyrus. |
| Arnebia. | Linaria. |
| Artemisia. | Lychnis. |
| Asperula. | Lysimachia. |
| Asters. | Monarda. |
| Balsam. | Œnothera. |
| Borago. | Ononis. |
| Calceolaria. | Plumbago. |
| Caltha. | Polygonum. |
| Campanula. | Potentilla. |
| Centaurea. | Ranunculus. |
| Coreopsis. | Rheum. |
| Dictamnus. | Rudbeckia. |

| | |
|-------------|---------------|
| Saxifraga. | Tradescantia. |
| Scabiosa. | Trollius. |
| Sedum. | Tussilago. |
| Senecio. | Valeriana. |
| Silene. | Verbascum. |
| Statice. | Veronica. |
| Thalictrum. | Yucca. |

PLANTS FOR HANGING BASKETS

| | |
|------------------------------------|----------------------------|
| Asparagus Sprengeri. | Geranium, Ivy-leaved. |
| Campanula isophylla alba. | Geranium, Jersey Beauty. |
| Campanula Mayii. | Hedera, Emerald Gem. |
| Fuchsia, Golden Treasure. | Hedera laciniata. |
| Fuchsia, procumbens. | Lysimachia Nummularia. |
| Geranium, Abel Carrière. | Nepeta glechoma variegata. |
| Geranium, Galilee. | Saxifraga sarmentosa. |
| Geranium, His Majesty the King. | |

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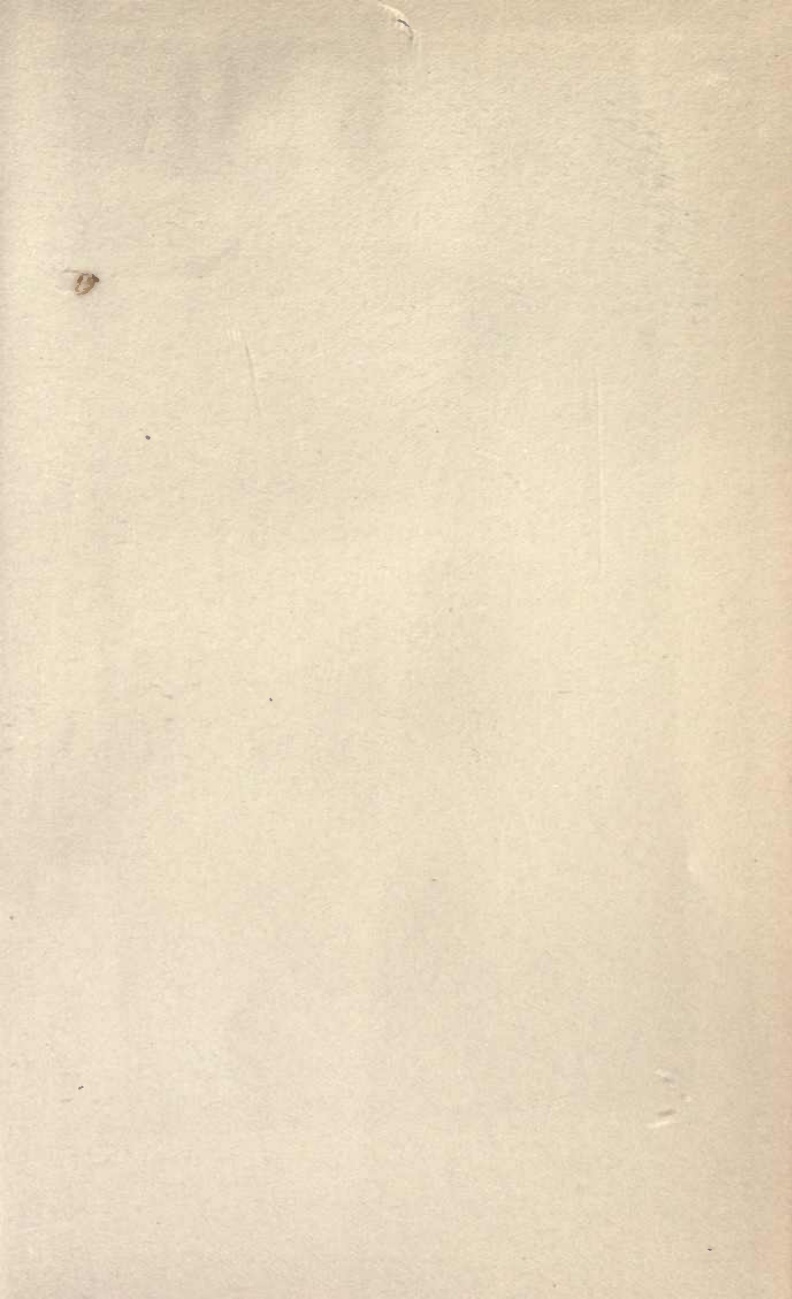
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